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UNIVERSITY OF TORONTO

REPORT OF THE DEAN

OF THE

FACULTY OF MEDICINE

Session 1951-1952

PRINTED AT THE UNIVERSITY OF TORONTO PRESS
TORONTO, CANADA, 1953

Report of the Dean of the Faculty of Medicine

The academic session which closed on June 30 has been perhaps one of the most active, and at the same time the most demanding on the energies and time of the staff, since the conclusion of the war. At Convocation in June there were qualified for the degree of M.D. 172 candidates. The greater number were those who entered the two-year premedical course six years ago. Others began their professional course after receiving an Arts degree from our own or other universities. There will continue to be varying opinions among the students themselves about the value of stiff requirements in the humanities in the premedical course. I think it is fair to say that the teachers in the upper years of the professional course have noted the improvement in ability to write papers and a greater facility in discussion. Certainly our students do themselves and their college credit in university debates and societies, and carry on the business of their own organizations with sound judgment, speaking with a clarity and confidence which has been gratifying and even surprising to their teachers.

There were registered for the session a total of 918 students in the undergraduate years, of whom 268 were in the premedical years and 650 in the professional classes. Of this number only 28 failed their year, but 101 were conditioned and will be required to write supplemental examinations, for the most part in only one subject. The lists show that a large percentage have attained honours.

In the Division of Physical and Occupational Therapy there were registered a total of 247 students. The last classes in the old courses finished in June, 1952. Forty-six students received the diploma in Occupational Therapy and 16 the diploma in Physical Therapy. Next year will see the graduation of the first group in the combined course for the diploma in Physical and Occupational Therapy.

The greater number, 57 per cent, of our medical students come from the Toronto area, 35 per cent from other areas in Ontario, and 8 per cent from outside the province. We have continued to take ten to twelve students from Saskatchewan in the third year. It is expected, however, that the medical school at the University of Saskatchewan will in another two years have facilities for completion of a full degree course. Since the opening of the new school in Vancouver there has been, as is to be expected, a great decrease in the applications from that province.

We continue to have the problem of displaced persons from Europe, who have studied for certain periods at various continental schools and are anxious to complete their studies in Canada. After careful study of their credentials and a special oral examination, we have admitted two or three such students each year but in no instance to a level higher than the second medical year. We have tried also to recognize our responsibilities to provinces which have no medical school of their own, to the West Indies, and to other areas in the Commonwealth. Only a few students from such places can be admitted, but apart from our desire to help educate doctors for communities badly in need of them, we are sure that the association of these men and women with our own students is of the greatest educational benefit to the school.

The activities of the college have flourished under the guidance of enthusiastic and enlightened student leaders. The presidency of the senior student organization in the University has again been held by one of our students, Mr. Sidney Wax. The *Varsity* is to be published next year under an editorial board of three medical students. "Daffydil" Night provided amusing and clever entertainment for four nights at Hart House. A very large percentage of our students took an active part in college and university sports, the championship university rugby team having been captained by our Ellen Mickle scholar, Mr. John Evans.

Concurrently with undergraduate teaching, the school continues to enlarge its responsibilities in a variety of graduate and postgraduate fields. It is true that we give very few diplomas and degrees in this field, but an increasing number of men wishing to qualify for fellowship in the Royal College of Canada look to the universities to provide the practical training and the academic instruction which the College

requires before they can sit for the examination. Moreover we have our responsibilities to the practising profession in this area of the province, for their continuing education in an era of medicine when there is constant change and revision of old ideas of treatment.

This year there were granted at the end of the session 10 diplomas in Public Health, 5 in Psychiatry, and 9 in Medical Radiology. There was 1 candidate for the M.S. degree. There were, however, approximately 150 doctors who, while doing their practical work at the various university hospitals, were receiving postgraduate instruction in their respective specialties in weekly lectures, as well as special instruction in evening classes in Anatomy, Physiology, and Pathology, arranged to meet the needs and requirements of their particular programmes.

In the field of continuing education for the profession we have given the regular seven weeks' course in the autumn in the three branches, Medicine, Surgery, and Obstetrics and Gynaecology. A special course in Ophthalmology for specialists in that field was given in January, with visiting lecturers from London, England, and New York. Another course in diseases of the oesophagus and bronchus, with visiting lecturers from the United States, was given by the Department of Oto-Laryngology. Both courses were well attended by specialists from Canada and the United States. Two courses for general practitioners were given during the year; one in the autumn, sponsored by the Alumni Association, was attended by 250 doctors; another in the spring, sponsored by the Ontario Medical Association and dealing with the problems of children, had an attendance of 200.

The new plan, whereby the school supplies to each of three centres visiting teachers each month during the fall and winter session, has met with considerable success. The three areas chosen were Port Colborne, Kirkland Lake, and the Lakehead. The teaching is in the nature of a ward round, with doctors leading the discussion. Without exception, the teachers who have taken part have reported that it is a most satisfactory method of instruction, and likewise we have good reports from the doctors in the various centres served. We have been able to carry out this programme with the aid of the Kellogg Foundation, and it is hoped that the grant may be continued and we may extend our efforts to other areas.

A programme such as ours, and I have given but a very brief outline of the many activities—the teaching of a large school of undergraduates, the training of specialists, the organization of courses for the profession, the lectures to various societies both national and international, the attendance at committee meetings locally in hospital, medical school, and university, and at many other committees of national organizations—all these responsibilities can only be carried by a large, well-trained, and well-knit staff of teachers, and with the co-operation of a group of teaching hospitals such as we are fortunate to have in this centre. Nevertheless the administration of each of the clinical departments becomes each year a heavier burden. Indeed, while the appointment to a university post in a clinical department marks a man as well trained and of promise as a teacher or investigator, it requires of him steadily increasing commitments in time and energy. When it is remembered that the great middle group of teachers, those who have passed from the junior ranks and are not the heads of departments, but on whose shoulders rests a tremendous load of teaching, lecturing, and committee work, receive only a very modest honorarium for their work in the University and no fees for their public ward or out-patient work in the hospitals, it is surprising, although gratifying, that we can find men who will take six years of graduate training and accept careers as teachers and investigators in a medical centre such as ours. The cost of medical education and research has of course increased tremendously in the past quarter of a century. Fortunately, support for many research projects can be sought from sources outside the University. But such funds, providing as they do annual grants for workers, do not take into account the added cost of overhead, maintenance of buildings, increased supplies, and increased space. The budget for our school, although it has increased steadily since

the war, does not reflect sufficiently in that increase either the normal increase in the cost of living, cost of maintenance, cost of supplies, or, what is more important, the steadily increasing responsibility of the school in the training of doctors in modern methods, the training of specialists, and the provision of leadership in medicine in a modern community, which the public quite rightly expects of it. One wonders whether there is sufficient awareness on the part of our Canadian citizens, particularly those who administer public monies, of the cost of providing personnel who will give them the standards of health and medical care to which they are so well aware they are entitled in this enlightened age of science.

Our Alumni Association continues to be active in many fields. Through the scholarship fund a student in each of the six years enjoys a $200 award, and in addition there are four bursaries of $100 each available to deserving students who are in need of financial aid. This year they have also made available a small loan fund to which graduate students may apply. Under Alumni auspices a round table discussion for final-year students has been organized. On this occasion five or six doctors representing practice in city, town, and country sit around a table for two hours and are asked questions by the students about all those problems which are seldom mentioned in their classes. Do they take holidays? Did they buy their practice? How much money does it take to begin practice? etc. This has proven to be a very valuable meeting and we are indebted both to the Alumni and to the doctors who come sometimes from considerable distances to speak frankly of the life of the busy practitioner in various parts of the province. The annual Alumni Dinner was held again at Hart House on the eve of Convocation. The graduating class of '52 and fifteen members of the class of '02 were guests of the Association. Professor Edison of Trinity gave a remarkable and scholarly address on "Time, Loneliness, and Existentialism". The attention given by the audience at 10 o'clock on a June night was a great tribute to the speaker.

For many years the teaching of anaesthesia has been under the direction of Dr. Harry Shields. Many of his old students will long remember him as a wise teacher and a skilful anaesthetist. On his retirement and on his advice, the teaching and training in this specialty will be organized in a separate department under the direction of Dr. Stanley Campbell who has been appointed Head and Associate Professor. Up until the present, Anaesthesia has been a division of the Department of Therapeutics; no one seems to know just how this occurred. With the advances in this specialty and the responsibility of the school in training specialists, it seems only right that it should enjoy the same autonomy accorded to other specialties. Dr. Stanley Campbell is one of our own graduates who returned from the First World War to study medicine. After postgraduate training he joined the staff as a teacher in 1929, interrupting his work to enlist again in 1939. He served overseas with No. 15 Canadian Hospital and returned to his teaching and practice in 1944. He has been appointed Anaesthetist-in-Chief to the Toronto General Hospital.

The Department of Art as Applied to Medicine continues to be an important and integral part of the medical school. As well as training a small number of students in medical art, it serves an expanding role in medical illustration for the members of the staff who are writing articles and books and delivering lectures to learned societies. The Director, Miss Wishart, in her capacity as President of the American Association of Medical Illustrators presided over a very successful convention which was held in Toronto last autumn.

That great and renowned teacher of Paediatrics, Dr. Alan Brown, retired from the chair last autumn shortly after the official opening of the new hospital for which he had worked so long and with such enthusiasm. He will be remembered by generations of students for his brilliant, if sometimes caustic and dogmatic teaching. Fortunately he will continue in his private practice and will, as ever, be interested in everything at the Children's. He is succeeded by Dr. A. L. Chute, O.B.E., an honours graduate in Medicine and Physiology, who has studied extensively in our own school

and at Cambridge, London, and Baltimore. He served for five years with the British and Canadian armies overseas and commanded No. 1 Field Research Unit, with the rank of Lieutenant-Colonel.

Dr. Clifford Ash who has had a long association with the late Dr. Richards, and recently visited therapeutic radiology centres in Europe and the United States, has been appointed Professor of Therapeutic Radiology and Director of the newly organized radiotherapy centre to be built on the grounds of the Wellesley Hospital. After nearly two years of planning it is expected that the building of a modern treatment and research centre may begin within the next few months. On the governing board will sit representatives of the Toronto General, the Toronto Western, and St. Michael's Hospitals, the Ontario Cancer Treatment and Research Foundation, and the University of Toronto. The Government of Ontario has made a large grant towards the construction of the building; the Ontario Cancer Treatment and Research Foundation has also made a handsome contribution; and the Government of Canada, through federal health grants, will be responsible for the furnishing of modern radiation equipment.

Miss Elizabeth Clarkson, M.A. (Glasgow), a medical social worker of wide experience, has been given a part-time appointment in the departments of Medicine and Public Health. In association with Dr. Trevor Owen and Dr. Ian Macdonald in the Department of Medicine, and with Dr. Donald Fraser and Dr. Milton Brown in Hygiene and Preventive Medicine, certain students in the third and fourth years will be introduced to the homes of patients who are attending the General Hospital, in an attempt to stress further the importance of environmental and social factors in the study of health maintenance and the treatment of disease. The Rockefeller Foundation has agreed to contribute to the new project on an experimental basis.

Dr. Kenneth McKenzie, who, after training with the late Harvey Cushing, established the neurosurgical service in this centre in 1925, retired from teaching and the headship of the service at the Toronto General Hospital on June 30. A very pleasant tribute to his great service to the school, the hospital, and to his advancement of neurosurgery was paid to him on the occasion of his retirement. A day-long series of papers and clinical demonstrations by his colleagues and old pupils terminated in a dinner and the presentation of his portrait painted by Varley. Dr. Harry Botterell, O.B.E., succeeds him in the direction of the service.

Other retirements include those of Dr. Beverly Hannah of the Department of Medicine, Dr. Charles Crompton in Surgery, Dr. Howard Burnham and Dr. Joseph Sullivan in Oto-Laryngology. Dr. Sullivan retires from teaching on appointment to the Board of Governors of the University.

Professor H. B. Van Wyck, who retired from the chair of Obstetrics and Gynaecology, but who continued on the staff as a lecturer in the Humanities in Medicine, died after several months of illness in March. He will long be remembered by a host of patients, students, and friends. Not often does the medical profession produce men of such stature, such brilliance, and such versatility. Doctor, teacher, writer, artist, musician, and philosopher—of no one can it be more truly said that he "adorned" his profession. Dr. William Magner, Assistant Professor of Pathology and Pathologist-in-Chief to St. Michael's Hospital, died in May of this year after a lengthy illness. He was well known for his brilliant teaching and had held many offices in organized medicine, including the presidency of the Canadian Medical Association. The medical school and St. Michael's Hospital lost another good friend and teacher in the person of Dr. Frank O'Leary who had retired from active teaching only a few months before his sudden death in February. Dr. H. G. Armstrong of the Department of Surgery, and also of St. Michael's Hospital, died in January of this year.

Mr. R. S. McLaughlin of Oshawa has established a foundation, the object of which is to extend financial aid to young men and women who are preparing themselves as teachers and investigators in the various clinical branches of medicine. Already the tremendous influence and advantages of this magnificent gift to medical

education are evident in our own school. Ten McLaughlin travelling fellowships and one McLaughlin research fellowship have been awarded to students from the school. The travelling fellows will have the privilege of spending a year abroad studying in their particular specialty, while the scholars here will be enabled to pursue some special problem related to the specialty in which they will work and teach. All candidates for travelling fellowships must have reached an advanced stage of training in their particular field, and must also have the assurance of a university teaching post on completion of their year of travel and study. Mr. McLaughlin, Dr. W. E. Gallie, and Mr. John Fraser are the trustees of the new foundation.

The J. P. Bickell foundation, established under the will of the late Mr. Bickell, after providing for very liberal support for the work of the Hospital for Sick Children, also provides support for certain areas of research in the medical schools of Ontario. The trustees have indicated their willingness to support certain sound projects which might for various reasons, particularly the expensive apparatus involved, find difficulty in enlisting aid from other sources. During the coming session Professor Hanes in Biochemistry, and Drs. Mustard, Macdonald, and Key in Surgery will be enabled with such assistance to conduct important investigations in their particular fields.

Another trust fund, the gift to the University of Mrs. Roscoe Graham and her family, will under the provision of the trust commemorate the life and service of the late Roscoe Graham to the University. A fellowship will be available every third year to a graduate student in Surgery, to enable him to further qualify himself by a year's travel and experience in clinics and schools outside Canada. The first Roscoe Graham Memorial Fellowship will be awarded in the spring of 1953.

After several years of planning, the building programme of the medical school and the hospitals associated with it gives promise of fulfilment. The new additions to St. Michael's have improved tremendously both the service to patients and the facilities for teaching undergraduate students. The new out-patient department is beautifully planned, particularly for the teaching of students in the final year. The Toronto Western Hospital programme is also nearing completion, and in both centres the association with a medical school has been given full recognition in planning for the accommodation of students, the enlargement of intern quarters, and the facilities for clinical research. The benefits of the new Children's Hospital have been evident in the improved arrangements for teaching and the use of the large clinical theatre for postgraduate conferences and meetings. I have spoken of the plans for the new radiotherapy centre to be built adjacent to the Wellesley Division of the General Hospital. This will include an enlarged out-patient and admitting department, and there is now being built a new nurses' residence. The Minister of Health has given assurance that money will be available in the immediate future for a new Psychiatric Hospital on ground adjacent to the existing hospital and extending through to College Street. The new Best Institute is well under way. And lastly, after years of planning, a highly successful campaign has resulted in the accumulation of sixteen million dollars for the modernization and rebuilding of the old General Hospital. Architects are busy revising plans; staff and students look forward with enthusiasm to the provision of modern lecture theatres, student rooms, new admitting departments, facilities for rehabilitation, operating theatres, in short a modern medical centre arranged for teaching, investigation, and treatment.

The school has been visited during the session by distinguished teachers from various centres in the United States, Great Britain, the Commonwealth, continental Europe, Asia, and South America. The Banting Memorial Lecture was given by Sir Charles Hercus of New Zealand. The annual Phi Delta Epsilon Lecture was given by Dr. Henry Bockus of Philadelphia. Our visitors also included Sir Clement Price Thomas, Dr. F. M. R. Walshe of Queen's Square Hospital, London, who gave the Convocation address, and many others.

The influence of the school in national and international affairs of medicine is reflected in the numbers of the faculty who have been accorded honours, member-

ships, and executive positions in learned societies. Professor Alex MacDonald was elected President of the Canadian Opthalmological Society. Professor Stuart Gordon is President of the Academy of Medicine of Toronto. Professor Ireland is Vice-President of the American Academy of Otolaryngology. Professor Lucas is Vice-President of the Royal Canadian Institute. Dr. K. G. Gray is Vice-Chairman of the Committee on Legal Aspects of Psychiatry of the American Psychiatric Association. Dr. Singleton is a member of the Board of Chancellors of the American College of Radiology, and Dr. Burke is President of the Toronto Radiological Society. Miss Wishart is President of the American Association of Medical Illustrators. Dr. Philip Greey has been appointed to the Expert Advisory Panel on Antibiotics of the World Health Organization. Professor Best is President of the Nineteenth International Congress of Physiology which meets in Montreal in September, 1953. W. E. Gallie, Dean Emeritus, and Professor Emeritus of Surgery, gave the John Stewart Memorial Lecture in Surgery at Dalhousie, and was honoured by the University of Rochester with an Honorary Doctorate of Science. Dr. D. W. G. Murray was the first McIlraith Guest Professor of Surgery at the University of Sydney, Australia. Professor Janes was appointed Vice-President (Surgery) of the Royal College of Surgeons of Canada and President of the American Association for Thoracic Surgery. He delivered the Arthur Dean Bevan Lecture before the Chicago Surgical Society, and was elected an Honorary Fellow of the Society.

The termination of another session reminds one of the pleasant and helpful co-operation of one's colleagues, not only in the various departments of the school itself but in the other faculties and colleges, and particularly in the administrative offices of the University, and finally convinces one that without the continued and efficient work of the secretarial services it would be impossible to administer the school.

J. A. MacFarlane, *Dean*

Medical Society

(September, 1951, to June, 1952)

Honorary President	Dr. J. A. MacFarlane
Honorary Secretary-Treasurer	Dr. Joslyn Rogers
President	S. L. Wax
Vice-President	J. F. Mustard
Treasurer	A. Chaplin
Secretary	P. Hopkins

The Medical Society conducts a programme involving the social, cultural, athletic, and other general extra-curricular activities of the medical student.

The Medical Arts and Letters Club included in its programme debates, speakers, and open meetings on topics of general interest. Also included in its activities were the many functions of the Medical Glee Club and the Osler Society. The Osler Society held six meetings at which papers were presented on the history and writings of well-known medical personalities. The Glee Club assisted in the choral work of "Daffydil." A recital was also given in Hart House on February 27 and was well received.

The Medical At Home was held on February 20 at the Royal York Hotel. Seven hundred and twenty couples were present and in every respect this affair was one of the high lights of the University's social season. The dance was well attended by faculty, undergraduates, and graduates alike. The friendly atmosphere, colourful decorations, and enjoyable entertainment made this an outstanding evening.

"Daffydil" was presented for five nights for the first time in its history. Over 125 students combined their various talents to make this an excellent campus show. In every respect "Daffydil" maintained the high standard of entertainment set by its many predecessors.

In football, soccer, lacrosse, golf, swimming, and basketball Meds teams reached important final positions. Numerous intramural successes were won and individual participation was stimulated to a high degree. Meds men were also active in volleyball, hockey, tennis, and water polo. The year's athletic activities were concluded with a final Meds banquet at which the athletic awards were given out.

The *Medical Journal* was expanded this year to include colour printing and increased advertising. The *Journal* is considered one of the finest student medical publications in Canada. This year there was an increase in the number of articles printed and in the contributions by students and staff.

Medical students contributed $360 to the SHARE campaign to help students in India, Pakistan, and Indonesia. They were again prominent in this campaign. They also took up a collection for the Toronto General Hospital Building Fund and contributed $400 to that fund.

The Common Room Committee, in co-operation with the Dean, Dr. Farquharson, and the Toronto General Hospital, evolved several plans for the establishment of improved facilities for students. These suggestions have been incorporated in the building plans of the Hospital. The Medical Society has also set up a special fund of $500 to be used in decorating and furnishing the new Common Room.

The Canadian Red Cross campaign for blood donors evoked a generous response from medical students. This blood was needed for replacement of stocks for Canadian troops in Korea.

Once again special Christmas cards were made available to the medical students and staff for the Yuletide Season.

The Toronto Committee of CAMSI conducted a programme which included the *CAMSI Journal*, films, an intern placement service, and summer employment services.

The Medical Insignia was finally completed and adopted by the Medical Faculty

and the Medical Society. The design will now become the official coat of arms for all medical stationery, crests, and pins.

A student-staff curriculum committee has been set up, consisting of three students, the Dean, and two members of the Faculty Council. It is hoped that this committee will enable students to offer worth-while suggestions for inclusion in the medical curriculum.

Medical students have made significant contributions to the general life of the University. They have been active in the Students' Administrative Council, the Blue and White Society, Hart House, the athletic programme of the University, the *Varsity*, and many other student groups. Medicine this year has emerged as one of the leading faculties on the campus.

S. L. Wax

Medical Athletic Association

(September, 1951, to June, 1952)

Honorary President	Dr. C. C. Gray
President	P. S. Rosen
Vice-President	J. McGillivray
Secretary-Treasurer	R. S. McMillin
Quartermasters	W. Renwick
	M. Fair
IV Medical Representative	M. Magazanick
III Medical Representative	H. Hyde
II Medical Representative	D. Vince
I Medical Representative	R. Ehrlich
II Premedical Representative	R. Jackson
I Premedical Representative	V. Colliza

During the fall season Meds was represented by one football team, two soccer, and five lacrosse teams. The Dafoe Cup was won for the fifth consecutive year by the Senior Meds lacrosse team.

The interest in golf shown by Meds men was greater this year than ever before with over 100 men participating in the interfaculty tournament. During the past three years the Faculty of Medicine has been building strong swimming and water polo teams. This year Meds splashed their way to victory in winning all three intramural swimming championships. Seven teams wore the medical colours in water polo, the finalists being Meds I and Meds II. The Eckhart Trophy was won by Meds I.

Basketball with twelve teams and hockey with three teams helped to fill out the winter sports schedule. Premeds Major were finalists and lost out only after taking the series to the full three games.

Volleyball proved once again to be of great interest to Meds men. For the second time Meds III lost to Junior Skule in the finals.

Squash has become an all-Meds sport. Over 100 men played squash in various tournaments this year. From these, eight men picked to represent Meds were able to win the squash trophy.

In addition, Meds were well represented in all intercollegiate sports.

Meds placed third in competition for the Reid Trophy, and were able to boast of the highest participation in team sports and the second highest in individual sports.

The Medical Athletic Stick was awarded to P. S. Rosen.

The final banquet with Dr. C. C. Gray as the guest speaker climaxed the year's activities. A successful year is anticipated for 1952-3 with Jim McGillivray as President.

P. S. Rosen

Medical Women's Undergraduate Association

(September, 1951, to June, 1952)

Honorary President	Dr. E. Chant Robertson
President	Annjane Carter
Vice-President	Mitsuko Sada
Treasurer	Joyce Cridland
Secretary	Diane Johnson
Social Convener	Freda McQueen
I Premedical Representative	Duaine Peacock

The M.W.U.A. works in close association with the Medical Society, looking after the more specific interests of the women in Medicine. As in other years, the activities were of a social nature, not duplicating those of the Medical Society, but providing an opportunity for the women in the various years to become better acquainted with each other and with the medical women graduates of Toronto.

The freshies of 5T7 were met by members of the M.W.U.A. on registration day in September and conducted on a tour of the campus. The president entertained at an evening party in their honour and a special outline of campus activities was given at this time. Second premedical year entertained the freshies at a "Book exchange" tea early in October. The other activities of initiation were very conservative, ending with a marshmallow roast at St. Hilda's residence.

The annual Initiation Banquet was held on October 29, with Dr. Ruth Franks, psychiatrist, as guest speaker. Guests included the Honorary President, Dr. E. Chant Robertson, and twenty graduates now living in Toronto.

On December 19 a supper party was held in the Medical Women's Common Room, in the Medical Building, before the Wednesday evening performance of "Daffydil." Gifts were collected for the children of the University Settlement school.

A forum, "After interning?", was held on February 6 at the School of Nursing. Women practitioners participating in the discussion were Dr. Franks and Dr. Jackson, psychiatrists; Dr. Hilliard and Dr. Maloney, obstetricians and gynaecologists; Dr. Gray, surgeon; Dr. Blatchford, anaesthetist; Dr. Chant Robertson, paediatrician.

The feminine section of the new Medical Alumni Association entertained at tea at the Women's College Hospital; this gave an opportunity to visit the different wards of the Hospital and to ask about internships.

Graduation party was held on March 10 at the School of Nursing and gift spoons were presented to the class of 5T2. Dr. Violet Henry, general practitioner, was chairman for an interesting discussion of women in her field.

ANNJANE CARTER

Medical Women's Athletic Association

(September, 1951, to June, 1952)

President	Irene Hain
Vice-President	Bernice Russell
Treasurer	Marjorie Platts
Secretary	Margaret Arnold

Despite the decrease in the number of women in the Faculty, Meds was again able to enter teams in the interfaculty competition in basketball, baseball, volleyball, and hockey, and to be represented in the bowling tournament and on intercollegiate basketball and hockey teams.

The basketball and volleyball teams did not advance beyond their leagues (in which they stood second and third, respectively), but the baseball team carried on

as far as the semi-finals. The great accomplishment of the year was the winning of the interfaculty hockey championship by defeating P.H.E. I team 6–4 in a two-game series after eliminating U.C. and St. Michael's. This was the second time since the beginning of the competition in 1913 that the Meds team won this honour, the first occasion being in 1929.

Early in the fall a swimming night was held at Lillian Massey pool. This was well attended and enjoyed by all. In this, as in other sports activities in Meds, women students from the Engineering Faculty and the School of Nursing were offered means of participating in athletics denied them because of the small numbers in their schools.

The annual M.W.A.A. banquet, held at the end of March, was as usual well attended. On this occasion the following prizes were distributed: two Senior T's, six Junior T's, and six Third colours awarded by the University, and three Medical M's and one Pre-Med Bar, given for participation within the Faculty. The University awards and the Harston Trophy for the hockey championship were presented by Miss Zelda Slack, Director of Women's Athletics in the University. Miss Slack later gave an entertaining and thought-provoking talk on "Goals."

IRENE HAIN

FELLOWSHIPS, SCHOLARSHIPS, MEDALS, AND PRIZES

Awarded at Convocation, June, 1952

GRADUATE

The William Goldie Prize	M. Ogryzlo, M.D., F.R.C.P.(C)
The Elizabeth Arbuthnot Dyson Fellowship	W. H. Friday, M.D. M. J. O'Brien, B.A., M.D. *aeq.*
The Percy Hermant Fellowships in Ophthalmology	J. H. Quigley, M.D., C.M. J. A. Halliday, M.D.
The Arch Hutchison Fellowship	D. Levy, M.D.
The Lister Prize in Surgery	R. F. Warren, B.Sc., M.D., F.R.C.S.(C)
The Alexander McPhedran Research Fellowship in Clinical Medicine	A. J. A. Noronha, M.D.
The Starr Medals	J. B. Firstbrook, M.D. A. M. Marko, B.A., M.D.
The E. P. Taylor Fellowships in Oto-Laryngology	J. K. B. Smith, M.D. E. J. Stark, M.D.
The Helen L. Vanderveer Fellowship	Helen E. H. Johnston, B.A., M.D.

FOURTH MEDICAL YEAR

The Cody Gold Medal	Miss F. M. Hill
The Cody Silver Medal	J. R. Evans
The Cody Silver Medal	R. R. Tasker
The Chappell Prize in Clinical Medicine	J. R. Evans
The Chappell Prize in Clinical Surgery	J. R. Evans
The Hendry Memorial Scholarship	P. S. Rosen
The Ellen Mickle Fellowship	J. R. Evans
The Ontario Medical Association Prize in Preventive Medicine	P. S. Rosen
The Doctor Roy Simpson Scholarship in Paediatrics	R. J. Angus J. R. Evans, *aeq.*
The Class of 1924 War Service Scholarships	N. P. Montgomery

THIRD MEDICAL YEAR

The Doctor Benjamin Cohen Prize in Obstetrics	G. Y. Hiraki
The Ronald Saddington Medal in Pathology	E. D. Wigle
The Sandoz Prize in Pharmacology	K. I. Dechert

Second Medical Year

The John Copp Bursary	C. P. Vernon
The Posluns Brothers Scholarship	R. J. Baird

Second Premedical Year

The Famous Players Canadian Corporation Scholarship	B. Langer

REGISTRATION OF STUDENTS IN THE FACULTY OF MEDICINE

Session 1952-3

First premedical year	127	
Second premedical year	120	
First medical year	157	
Second medical year	149	
Third medical year	162	
Fourth medical year	170	
Art as Applied to Medicine	3	
Physical and Occupational Therapy	280	
Bachelor of Science in Medicine	5	
Diploma in Public Health	14	
Diploma in Medical Radiology	7	
Graduate students		
Psychiatry	21	
General	62	
	1,277	
Advanced graduate course (Medicine, Surgery, Obstetrics and Gynaecology	45	

Anatomy

Under the direction of Professor J. C. B. Grant

During the year 1951-2 there were 671 undergraduate and graduate students working in the Department of Anatomy. They were distributed among the 26 courses mentioned below, as follows:

Undergraduate Courses in Gross Anatomy and Neuro-anatomy:

1.	Medical, first year	155	
	Art as Applied to Medicine	2	
	Teachers' course, Physical and Occupational Therapy	1	
2.	Dental, first year	78	
3.	Physical and Occupational Therapy, first year	107	
4.	Physical and Occupational Therapy, second year.	81	
5.	Physical and Health Education, second year	45	
6.	Optometry	12	
		——	481

Graduate Courses in Gross Anatomy:

7.	M.S., F.R.C.S., and Radiology (evening courses)	43	
8.	Ophthalmology	14	
9.	Oto-Laryngology	9	
10.	Dental Specialties (B.Sc. (Dent.) and diploma course)	12	
11.	Demonstrators of Anatomy to Medical students	5	
12.	Demonstrators of Anatomy to Dental students	3	
13.	Anaesthesia	11	
14.	Postgraduate Course in Surgery	25	
15.	Postgraduate Course in Obstetrics and Gynaecology	20	
16.	Graduate nurses	6	
17.	Graduate School	2	
		——	150

Undergraduate Courses in Histology:				
18.	Medical, first year	155		
	Art as Applied to Medicine	2		
19.	Dental, first year	78		
20.	Physical and Occupational Therapy, first year	107		
21.	Dental Hygiene, first year		6	
22.	Physical and Health Education, second year	45		
23.	Physiology and Biochemistry, second year		20	
24.	Occasional and Graduate School students		5	
25.	Graduate dentists		7	
			—	38
Postgraduate Research Students				
26.	Graduate research students		2	2
		Total		671

The sessional demonstrators of Anatomy are usually a selected group of men. This year's demonstrators will be remembered as the group that took great personal interest in the individual students and for the help they gave so freely to those who did not take too easily to Anatomy.

Dr. Ruggles K. George, who for more than twenty years has been associated with the Department, first with the rank of demonstrator and then with that of Assistant Professor, and who recently relinquished his full-time for part-time duties, has retired from his position on the staff. Dr. George was consistently punctilious, conscientious, and wholly reliable. These qualities, developed in high degree, added to his congenial personality, made him a much-valued member of the staff and one who will be much missed.

Dr. Alice Gray, after being associated for many years with the cancer researches that are being performed in this Department, is leaving to become the Director of Laboratories of the Women's College Hospital.

Mr. George A. L. Ross, chief laboratory assistant in Histology, is in his spare time District Cadet Officer (Central Ontario) in the St. John Ambulance Brigade. He has recently been appointed secretary-treasurer to the Provincial Cadet Camp Committee, secretary to the Provincial Cadet Leaders' Annual Conference Committee, and has received the St. John Ambulance Association ten-year first aid Proficiency Certificate, 1951-2.

Dr. Ham at the request of the National Cancer Institute visited in September, 1951, the various cancer projects that are being carried on with its support in the universities of Western Canada. Dr. Ham last year also served as a member of the Advisory Committee of Medical Research and of the Associate Committee of Dental Research of the National Research Council, and also as an honorary secretary-treasurer of the Banting Research Foundation. The office of the latter is now situated in the Anatomy Building.

Research

Dr. J. V. Basmajian, with the collaboration of Dr. J. F. Murray of the Hospital for Sick Children, and with the co-operation of many medical students, is making an electromyographic study of the functions of the muscles of the leg and foot. He has completed a study of the valves in the main veins of the lower limb, which shows that these valves have little, if any, relationship to saphenous varix. He is continuing studies of the marginal arteries of the large intestine; and also of the length of the long bones and their relationship to stature.

Dr. S. H. Bensley has continued the histological studies of the reactions of connective tissues and certain organs to histamine. In collaboration with Dr. Raymond

Parker, Dr. Bensley has made histological studies of the growth and survival of tissue cultures of cartilage, bone, and other tissues from twelve-day old chick embryos in synthetic media No. 199.

Miss Patricia F. Stevens came to the Department on April 1 to assist Dr. Bensley in the histological studies of the effects of cortisone on the connective tissue and their reactions to histamine in intact and adrenalectomized albino rats and golden hamsters. This work is supported in part by grants-in-aid from the Banting Research Foundation and the Canadian Arthritis and Rheumatism Society.

In connection with the cancer project being carried on under the general direction of Dr. A. W. Ham, and with financial assistance from the National Cancer Institute and the Foster Bequest Fund of the University of Toronto, two studies were carried on. (1) Dr. Margaret Armstrong and Dr. Alice Gray, using the relatively pure malignant tissue they have obtained by serially cultivating rat liver tumours in yolk sacs, have succeeded in preparing extraordinarily thin sections suitable for electron micrography and are comparing electron micrographs of these with those prepared from similar thin sections of normal, regenerating, and embryonic liver. (2) Dr. Marjorie M. Mosbaugh completed and published her study of the effects of cortisone in stimulating bile secretion in chick embryos. She has also shown that the growth of a tumour in the yolk sac causes the embryo's spleen to become enlarged. She is engaged in a study planned to determine whether this is a specific effect of malignancy or an immunity reaction to the presence of rat tissue in the chick embryo. She is also investigating the anaemia produced in rats by the Murphy lymphosarcoma and the alleged ability of this tumour to produce leukaemia if it is injected intraperitoneally.

Working under Dr. Ham's direction, and on a grant from the National Research Council, Dr. J. E. Mullens has investigated the response of the Murphy lymphosarcoma to cortisone. This tumour, from the beginning of this study, has not been very sensitive to cortisone but became even less sensitive as it was transferred through several series of animals treated with cortisone. Its resistance to cortisone persisted when it was transferred to new hosts, which indicates that resistance to cortisone is an attribute of the tumour cell and not of the host. Resistance to cortisone was found to persist even though the tumour was transferred through seven adrenalectomized hosts.

For the degree of B.Sc. (Med.), Dr. A. J. Hudson, as Richardson Research Fellow, has investigated the vascular pattern of the choroid plexus of the lateral ventricle in man and in certain animals.

Publications

Basmajian, J. V. "The depressions for the arachnoid granulations as a criterion of age" (*Anatomical Record*, vol. 112, 1952).

Bensley, S. H. "On the origin of mast cells" (*Anatomical Record*, vol. 112, 1952, p. 8).

Bensley, S. H. and Ham, A. W. "The histophysiology of the connective tissues"; in *Rheumatic diseases*, pp. 381–4. Philadelphia: W. B. Saunders Company. 1952.

Gordon, S. D. and Ham, A. W. "Behaviour of thrice-frozen transplanted cancellous bone chips" (*Proceedings of the Royal College of Physicians and Surgeons of Canada*, 1951).

Ham, A. W. and Gordon, S. D. "Nature of the so-called striated borders of osteoclasts" (*Anatomical Record*, vol. 112, 1952, p. 147).

Hudson, A. J. and Smith, C. G. "The vascular pattern of the choroid plexus of the lateral ventricle" (*Anatomical Record*, vol. 112, 1952, p. 43).

Mosbaugh, M. M. and Ham, A. W. "Stimulation of bile secretion in chick embryos by cortisone" (*Nature*, vol. 168, Nov. 3, 1951, p. 789).

Muller, T. (Visiting Fellow). "The effect of estrogen on the loose connective tissue of the albino rat" (*Anatomical Record*, vol. 111, 1951, pp. 355–79).

Art as Applied to Medicine

Under the direction of Miss Maria T. Wishart

During 1951-2 the demand for illustrations has been constant. The work has covered a wide variety of subjects and techniques. Some of the publications in which our illustrations have appeared and conventions at which they have been shown are: *American Journal of Anatomy, American Journal of Physiology, Annals of Surgery, Journal of Neurosurgery, Canadian Medical Association Journal, British Journal of Bone and Joint Surgery, Physiological Reviews*, provincial education pamphlets, Canadian Medical Association Convention, Canadian Ophthalmological Society, Academy of Medicine, American College of Physicians, Surgical and Physiological Conventions, Liver Injury Conference, Royal Canadian Institute.

Miss Elizabeth Blackstock has carried out some interesting studies on methods of portraying the work of Dr. J. C. McCulloch on "The Anatomy of the Ciliary Zonule of the Eye" and the work of Dr. H. J. Barrie on "Fundamental Studies on the Smooth Muscle of the Human Kidney and Its Relation to the Problem of Renal Compression."

Mrs. Louise Gordon, Frosst Fellow, has devoted one day each week exclusively to the preparation of illustrations for Dr. A. W. Ham's revised *Textbook of Histology*, which is to be published shortly.

Miss Elizabeth Blackstock completed series of surgical drawings to illustrate papers by Dr. J. C. Goodwin on "Surgical Reconstruction for Urethral Incontinence," presented at the C.M.A. meeting in Banff, June, 1952, and Dr. J. L. McDonald on "Method of Treatment of Comminuted Fractures of the External Condyle of the Tibia involving the Superior Plateau," presented before the joint meeting of the orthopaedic associations of the English-speaking world in London, England, June, 1952.

Mrs. Louise Gordon completed a series of pen-and-ink diagrams for use in recording cancer lesions in surveys conducted by the National Cancer Foundation.

Since the end of the school year Miss Elizabeth Marshall, a senior student, has been working on further illustrations for Dr. H. A. Cates's *Textbook of Primary Anatomy*, and the transposition of some of these illustrations into teaching charts.

It is of interest to note that a Medical Art Department has been opened at the Hamilton General Hospital, under the direction of Miss Anne Scott, a graduate of our course in Medical Illustration.

The annual meeting of the Association of Medical Illustrators was held in Toronto in October, 1951, at the Hospital for Sick Children. At this meeting a most unusual and informative exhibit (the first of its kind) was arranged. The work submitted by students and staff of this Department compared favourably with that of experienced and well-known medical artists from all parts of the North American continent. Miss Elizabeth Blackstock and Miss Marguerite Drummond were elected to active membership in the Association.

Miss Maria T. Wishart was elected President of the Association of Medical Illustrators, Chairman of the Education Committee of the Association of Medical Illustrators, and Consultant in Medical Illustration to the *Ontario Medical Review*.

Bacteriology

Under the direction of Professor Philip Greey

The programme of undergraduate teaching to the second medical year, described in previous reports, has been continued. Further emphasis has been placed on instruction through small discussion groups held weekly under the guidance of a demonstrator. The appointment of Dr. Marion Ross to the staff as a demonstrator enabled

the number of students in each group to be reduced, thus permitting better individual instruction. Plans are under way to have Dr. C. E. van Rooyen associated with the Department. This will strengthen the teaching of Virus Infections and provide competent supervision of virus research. The series of lectures on applied bacteriology to the fourth-year students was continued and Dr. H. L. Ormsby lectured on "The Bacteriology of Infections of the Eye." Dr. Gordon Hawks gave a series of review lectures on Bacteriology to members of the postgraduate course in Oto-Laryngology.

Research

For the past few years Dr. P. H. Greey and Miss Joan Hennessy have studied the antibiotic sensitivities of bacteria isolated from infections in patients of the Toronto General Hospital. During 1951 a marked change in the sensitivity of strains of staphylococcus aureus was observed. In contrast with previous findings, more than 50 per cent of the staphylococcal strains causing infections were found to be resistant to penicillin and streptomycin and some 30 per cent were resistant also to aureomycin and terramycin. The resistance to chloromycetin also increased in 1951. This change in the *in vitro* resistance of staphylococcus aureus to antibiotics was accompanied by an increase in severe and fatal staphylococcal infections. Perhaps these findings indicate that the end of the antibiotic era in the treatment of staphylococcal infections in hospitals is near at hand.

Dr. R. M. Price is continuing her interest in the prophylactic vaccination against tuberculosis particularly with a view to determining the duration of allergy in the vaccinated adult. She has also been trying out a new skin test, introducing BCG by scarification, in order to detect total allergy, which is infratuberculin as well as tuberculin allergy. A modified slide culture method for the various types of tubercle bacilli is being tried out by Dr. Price.

Dr. G. H. Hawks at St. Michael's Hospital is studying a case of sporotrichosis and is preparing an article on moniliasis. Dr. T. E. Roy at the Hospital for Sick Children has completed a study on the blood concentration and absorption of chloromycetin. He also is studying the acquisition of resistance of Myco. tuberculosis to various antibiotics *in vitro* and the value of the haemagglutination test in tuberculosis. Dr. Marion Ross at Sunnybrook Hospital is investigating the pleuro-pneumonia group of organisms and the haemagglutination test in tuberculosis. She is preparing case reports on nocardiosis and on pulmonary blastomycosis. Dr. J. P. Burke is studying the transient bacterial flora of the skin. Miss Joan Hennessy has studied the incidence of carriers of penicillin-resistant staphylococci in hospital personnel, the effect of combinations of antibiotics on bacteria *in vitro*, and the blood concentrations of penicillin resulting from the administration of large doses of the drug by mouth. Mr. Michael Ikwuemesi is investigating the purification of penicillinase, its antigenicity and the effect of anti-penicillinase in experimental infections.

Publications

Cleland, H. "Hexachlorophene (G11) in the surgical scrub—a brushless surgical wash" (*Canadian Medical Association Journal*, vol. 66, May, 1952, pp. 462–4).

Roy, T. E., *et al.* "Observations 'in vitro' on adaptation of Myco. tuberculosis to streptomycin and chemotherapeutic agents" (*Canadian Journal of Public Health*, 1951, vol. 42, p. 70).

Roy, T. E., *et al.* "Report on two cases of leishmaniasis in children" (*Canadian Journal of Public Health*, 1952, vol. 43, p. 33).

Roy, T. E., *et al.* "Severe infections due to organisms B5W (Bacterium anitratum)" (*Canadian Journal of Public Health*, 1951, vol. 42, p. 71).

Shusterman, M. "Toxoplasmosis in the Toronto area" (*Transactions of the Canadian Ophthalmological Society*, 1951, pp. 75–93).

Biochemistry

Under the direction of Professor A. M. Wynne

The session of 1951-2 was the first since 1918 in which Professor Hardolph Wasteneys was not actively engaged in the work of the Department. To all those who have been his students or his colleagues at one time or another during the past thirty years the announcement of his retirement last year as Head of the Department, though an occasion for regret, must have brought back many pleasant memories of their associations with him. Members of the present staff who have worked with him for a number of years are grateful for his kindly and helpful interest in their work, for the spirit of harmony which he so successfully fostered, for the freedom allowed in the organization of courses of study and of programmes of research, and, in general, for the privilege of being members of his department. As Professor Emeritus of Biochemistry, Dr. Wasteneys retains his association with the Department and with the University.

Other changes in the staff include the appointment of Dr. Charles S. Hanes, F.R.S., as Professor of Biochemistry and the return to the Department of Professor J. Manery Fisher. Professor Hanes, a graduate of Toronto, has been associated for many years with the School of Botany and the School of Biochemistry at the University of Cambridge. Dr. Fisher returned after an absence of one year during which she was engaged in research in the Northern Laboratories of the Defence Research Board at Fort Churchill, Manitoba.

The total number of students registered in the Department during the session 1951-2 was 376, compared with 421 in 1950-1, 453 in 1949-50, and 555 in 1948-9. This diminution in numbers is attributable to a reduction in the number of undergraduate students of biochemistry in all three faculties of Medicine, Dentistry, and Arts. The number of graduate students enrolled in the Department has, on the other hand, increased from 53 in 1948-9 to 61 in 1950-1 and 74 in 1951-2. Included in the 302 undergraduates registered in the Department during the past session were 145 medical students, 64 dental students, 35 students in the Physiology and Biochemistry course, 7 in Food Chemistry, 8 in Biology, 25 in Household Economics, 5 in Household Science, 12 in the General Course, and one in the Pass Course. Of the 74 graduate students registered in the Department 50 were sponsored in the School of Graduate Studies by other departments and 24 by the Department of Biochemistry. This latter number was made up of 12 candidates for the degree of Ph.D. in Biochemistry, 9 for the M.A. degree, and 3 students who were registered as not proceeding to a degree. Three of the 21 students who were registered in the School of Graduate Studies as candidates for higher degrees in Biochemistry carried out their research work in other departments of the University. The work of two of these students was supervised by Professor R. C. Parker and Dr. J. F. Morgan of the Connaught Medical Research Laboratories and that of the third student by Professor W. R. Franks of the Banting and Best Department of Medical Research.

Apart from supervision of research, responsibility for instruction was distributed among the staff as follows:

Medical students: lectures by Professor Wynne, laboratory supervision by Professor Fisher;

Dental students: lectures and supervision of laboratory by Professor Fisher;

Honour Arts students, third year: lectures and supervision of laboratory by Professor Crocker;

Honour Arts students, fourth year: 30 lectures were given by Professor Butler; the remainder were shared by Professors Crocker, Fisher, and Hanes;

Advanced laboratory course: Professor Butler;

Graduate lecture course on enzymes: Professors Hanes and Wynne.

During the session members of the Department were invited to present papers on topics related to their special fields of research. Dr. J. M. Fisher discussed the

subject "Brain Electrolytes" at the graduate seminar of the Department of Physiology, Columbia University. Dr. G. C. Butler contributed a paper to a symposium on "Isotopes in Experimental Biology and Medicine" at the annual meeting of the Royal Society of Canada at Laval University; and he took part, by invitation, in a symposium on phosphorus metabolism at the Johns Hopkins University. Dr. C. S. Hanes was one of the invited speakers at this symposium and presented a paper on "Group Transfer Reactions involving Peptides and Amides."

Dr. Marko was awarded a graduate medical research fellowship by the National Research Council of Canada which will enable him to spend a year in research at the National Institute for Medical Research, London, under the direction of Professor A. Neuberger. Dr. Marko was also awarded a Starr Medal by the Faculty of Medicine.

As in previous years the research programmes of the Department have been greatly facilitated by grants received from several sources both outside and within the University. These include the National Cancer Institute of Canada, the National Research Council, the Research Council of Ontario, the Banting Research Foundation, the J. P. Bickell Foundation, the Foster Bequest, the Insulin Fund, and the University's Advisory Committee on Scientific Research. Members of the Department are grateful for the assistance so generously provided.

Research

Under the direction of Professor G. C. Butler

Mr. L. H. Cohen has used radioactive phosphate to study the incorporation of phosphate into the nucleic acids of the developing chicken embryo.

Mr. R. O. Hurst has begun an investigation of the products of the partial hydrolysis of desoxyribonucleate with a view to obtaining information about the structure of desoxyribonucleic acid and the mode of action of desoxyribonuclease.

Dr. A. M. Marko has improved the method for extracting histones from desoxyribonucleoprotein, and he has begun a study of some chemical and physical properties of the histones.

Mr. D. H. Murray has been conducting experiments directed towards a synthesis of D-ribose and D-ribo-2-desose labelled with radioactive carbon.

Mrs. M. A. Packham has continued her studies of the biological synthesis of glucuronides, with the aid of radioactive carbon.

Mr. I. G. Walker has investigated the preparation and chemistry of desoxyribomononucleotides.

Under the direction of Professor B. F. Crocker

Dr. Crocker and three of his graduate students, Messrs J. L. Koppel, C. J. Porter, and Ian Maclean, have continued the study of the mechanism of enzyme formation. Mr. Koppel turned his attention to beta-galactosidase in *Escherichia coli* and has investigated the influence of environmental factors and of added substances on the formation of the enzyme. Its formation can be greatly stimulated by certain sugars having specific structural characteristics. This effect can be suppressed by structural analogues of the "inductors," presumably by competition for the specific intracellular catalyst which is responsible for the formation of the beta-galactosidase. Mr. Porter has studied the autosynthetic nature of the "adaptive" process, the inhibition of enzyme induction by inhibitors acting at different stages of the process, the kinetics of the inhibition caused by a series of related analogues, and the question of inducing the formation of more than one enzyme by a single chemical substance. Mr. Maclean has studied the effect, in *E. coli*, of the induced formation of one enzyme, beta-galactosidase, on the cell content of a previously induced enzyme, serine deaminase.

Mr. Paul Odense has embarked on a study of digestion *in vivo*. By photosyn-

thesis in tobacco leaves he prepared glucose labelled with C^{14}. This was fed to depleted rats and the labelled fat which was synthesized was separated from the bodies of the rats. Mr. Odense proposes to feed this fat to re-entrant fistula dogs in order to determine the degree of hydrolysis reached at different levels of the gastrointestinal tract. Isotope labelling is necessary in order to differentiate between ingested and secreted material.

Under the direction of Professor J. Manery Fisher

With the assistance of Mrs. Jean M. Forbes, Dr. Fisher has resumed the study of the permeability and the electrolyte pattern of the tissues of the embryonic, the newly hatched, and the adult chicken. In addition some rat liver tumours grown in chick embryos after serial transplantation were analysed for electrolytes and water.

Mr. L. B. Smillie has continued the investigation initiated some time ago by Dr. Fisher on the relation of potassium to carbohydrate metabolism. He has studied the effects of different concentrations of potassium on the uptake of oxygen and of potassium by frog muscles in the presence of lactate and of lactate plus insulin.

Under the direction of Professor C. S. Hanes

Dr. Hanes is continuing the studies of the enzymic mechanisms of biological synthesis which were begun at the University of Cambridge. Though his research programme has not got properly under way because of inadequate laboratory facilities, some progress has been made in further studies of transpeptidation reactions. Two postgraduate students, G. E. Connell and G. H. Dixon, have devoted much time to the preparation by purely chemical means of certain peptides needed for this work, and improved procedures for the analysis of the enzymic reactions have been evolved. The remodelling of one of the undergraduate teaching laboratories to accommodate Professor Hanes and his research group is now almost complete.

Under the direction of Professor A. M. Wynne

Mrs. R. Sheinin, Mr. T. Bojarski, and Dr. C. G. Stewart have been engaged in studies related to oxidizing and phosphorylating mechanisms in living tissues. Mrs. Sheinin devoted much of her time to quantitative studies of the succinic oxidase activity of various fractions of rat liver–homogenates, and she has investigated also the extent of phosphorylation accompanying the oxidation of succinic to fumaric acid. This and other reactions of the tricarboxylic acid cycle have been studied with a view to comparing the enzymatic activity of normal and tumour tissue. This has been the purpose of Mr. Bojarski's work also. He has been concerned with numerous problems connected with the oxidizing and phosphorylating activities of animal tissues.

Arising out of previous studies involving the estimation of carbonyl compounds formed as the result of oxidation in biological systems, the work in which Dr. Stewart has been engaged for the past several months represents a detailed physico-chemical study of the 2,4-dinitrophenylhydrazones of carbonyl compounds. The information gained will be useful in establishing rapid methods of analysis to be used in certain kinetic studies of oxidation in biological systems.

Graduate students have completed the following research work.

For the M.A. degree:

STEWART, Pauline B. The effects of ions on the interaction of adenosine triphosphate and isolated rabbit psoas muscle fibres.

For the Ph.D. degree:

BARLOW, JOHN S. Changes in the concentration of electrolytes in chick tissues during growth.

HURST, ROBERT O. The enzymatic degradation of thymus nucleic acid.
KOPPEL, JOHANNES L. The mechanism of the formation of enzymes.
MARKO, ARTHUR M. Chemical studies of desoxyribonucleoprotein.

PUBLICATIONS

BERENBOM, M. and YOUNG, L. "Biochemical studies of toxic agents. III. The isolation of 1- and 2-naphthylsulphuric acid and 1- and 2-naphthylglucuronide from the urine of rats dosed with 1- and 2-naphthol" (*Biochemical Journal*, vol. 49, 1951, pp. 165–9).

HANES, C. S., HIRD, F. J. R., and ISHERWOOD, F. A. "Enzymic transpeptidation reactions involving γ-glutamyl peptides and α-amino acyl peptides" (*Biochemical Journal*, vol. 51, 1952, pp. 25–35).

HURST, R. O. and BUTLER, G. C. "The chromatographic separation of phosphatases in snake venoms" (*Journal of Biological Chemistry*, vol. 194, 1951, pp. 91–6).

MANERY, J. F. "Inorganic metabolism of brain"; in *Biology of mental health and disease*, the Twenty-seventh Annual Conference of the Milbank Memorial Fund. New York: Paul B. Hoeber Inc. 1952.

PACKHAM, Mrs. M. A. and BUTLER, G. C. "Studies of the biological synthesis of glucuronides" (*Journal of Biological Chemistry*, vol. 194, 1952, pp. 349–57).

Hygiene and Preventive Medicine

Under the direction of Professor D. T. Fraser

The total number of medical students in the fourth medical year receiving instruction in the Department was 175, which is the highest figure experienced. The large class in the fourth year is the fourth to be graduated since the inauguration of the new schedule in 1945. The staff feels encouraged to think that the teaching programme distributed over each of the four years is much more effective than formerly, when the subject was taught in the fifth year.

The summer internship in public health for members of the third medical year was granted to 5 students. As reported in previous years, selected members of the third medical year have been attached to county health units for a period of three months during the summer. An opportunity is thus presented to the student to gain first-hand experience of the services rendered to the community. A practical demonstration of this sort materially supplements the didactic instruction of the classroom. It would be highly desirable that a larger proportion of undergraduates be offered field experience which is essentially limited by the financial support granted to this project. It is a pleasure to acknowledge the assistance of the Department of Health and Welfare through the health training grant.

Under the auspices of the Dean a meeting of representatives of the Departments of Medicine and Preventive Medicine was called to consider the proposal of a joint undertaking to extend the teaching of Social Medicine. It was decided that during the session 1952-3 an opportunity will be offered to a small group of selected students to visit, on a voluntary basis, the homes of patients for the purpose of studying the social and economic factors as they affect the health of the individual. The contact between the student and the patient will be through the Out-Patient Department and the wards of the Toronto General Hospital. Patients will be carefully chosen through the assistance of the Department of Social Service of the Hospital. In the selection of these every effort will be made to choose patients who are likely to require medical care throughout at least eighteen months and who are members of a normal household including children. The student will act as an observer of the patient and family during the third and fourth medical years. He will be required to present his findings to a staff member for review and guidance. Conferences between the students, representatives of the two departments, and a social worker will be held. It is also antici-

pated that students under this scheme will present selected cases to the entire class for study. The Rockefeller Foundation has provided funds for the inauguration of this plan, which if found valuable will be extended.

The total number of students receiving graduate instruction was 47. Of this number 2 were registered for the Ph.D. degree in the Department, 2 were registered for the M.A. degree in the Department, and 7 others received instruction in subjects elected as minors.

It is evident that the University continued to attract students from many parts of Canada as well as from foreign countries. The enrolment of physicians for the diploma in Public Health for this session was 10. Of these 4 were from Ontario, 3 from British Columbia, 1 from New Brunswick, 1 from Quebec, and 1 from France. In other courses, 1 student was registered for the diploma in Dental Public Health and 6 for the diploma in Veterinary Public Health. As in previous years, courses of instruction in Bacteriology, Immunology, Parasitology, and Virus Infections were given to these students, and also to suitably qualified graduate students. Four students proceeding to the Master of Applied Science degree were given a special course in Microbiology.

Laboratory courses and lectures were given as usual to the students in second-year Pharmacy, third-year Pharmacy, second-year and third-year Household Science and Household Economics, third-year Physiology and Biochemistry, third-year Food Chemistry, third-year Physical and Health Education, and to students in the School of Nursing. For the first time this year students in the fourth year of the B.Sc.Pharm. course were given a course in Hygiene and Preventive Medicine during both terms.

The total enrolment of students receiving instruction in the Department is 1,154, as follows:

Candidates for the diploma in Public Health	10
Candidates for the diploma in Dental Public Health	1
Candidates for the diploma in Veterinary Public Health	6
Candidates for the degree of Master of Applied Science	4
Candidates for the certificate in Public Health	4
Candidates for the degree of Doctor of Philosophy	2
Candidates for the degree of Master of Arts	2
Graduate students not proceeding to a degree	5
Graduate students registered in other departments	7
Candidates for the degree of Master of Science in Agriculture	6
Faculty of Medicine	
Fourth year	175
Third year	169
Second year	152
First year	156
Faculty of Arts	
Household Economics, second and third years	48
Physiology and Biochemistry, third year	22
Food Chemistry, third year	5
Faculty of Household Science, second and third years	10
School of Physical and Health Education, third year	47
School of Nursing	126
Ontario College of Pharmacy, second, third, and fourth years	197

Research

Members of the staff have undertaken the following research work:

Dr. M. H. Brown has continued the work on the preparation of BCG vaccine. This vaccine is being used chiefly in a freshly prepared fluid state. A dried vaccine has been made which shows a fair stability over a period of one year. A dried vaccine has many advantages, particularly in detecting any change in pathogenicity of the strain

and its usefulness in remote areas where the freshly prepared vaccine is difficult to obtain. Miss Norma Howard has continued her observations on the haemagglutination reaction in BCG vaccinated persons. The findings indicate that this reaction does not afford a useful serological procedure in determining the efficacy of BCG vaccination in humans. In contrast, rabbits show a rise in haemagglutinin titre after BCG vaccination which persists for several months. The effect of ACTH on BCG infection in guinea-pigs has been further investigated. There is no evidence that ACTH enhances the invasiveness.

A study of TAB vaccine has been carried out. With Dr. Plummer, the antigenicity of three strains of S. typhosa Beta has been investigated in actively and passively immunized mice. One of the strains differed from the others in that it was almost devoid of H antigen. From the results obtained it would appear that this slightly motile strain was antigenically equivalent to the other two strains when tested in mice.

Dr. F. H. Fraser has continued the study of antibiotic strains of fungi. Several active strains have been isolated from samples of Arctic soil. Conditions for the production of antibiotic in deep culture have been investigated.

Dr. F. O. Wishart has investigated the problem of the local and general reactions in humans following the injection of three preparations of tetanus toxoid.

Dr. R. J. Wilson has continued his fundamental research on the growth requirements of H. pertussis using a synthetic medium composed of amino acids and other growth factors of known chemical composition. In collaboration with Mr. J. D. Wilson in his project relating to studies in rheumatism and arthritis the investigation of proteinuria in the normal rat has been completed and will be published shortly. These results are pertinent to the extension of the work in which it will be necessary to assess kidney damage induced by various agents of biologic origin.

Dr. C. O. Siebenmann under a grant from the National Research Council has in collaboration with Dr. A. Zubrys continued a search for an antituberculous agent which combines high therapeutic effectiveness with low toxicity. Experimental techniques were developed for detecting the toxic effect of drugs on red blood cells. Such haematological examinations, when combined with suitable screening tests for chronic toxicity and antituberculous activity, proved valuable in selecting synthetic compounds which hold promise as potential agents for long-term treatment of tuberculosis.

On the completion of his M.A. project Mr. J. Fahey has continued his investigation on bacteriophage active against C. diphtheriae. Dr. H. Zeman has carried forward the investigation of bacteriophages active against certain acid-fast organisms.

Dr. E. Kovacs under a Mental Hygiene grant is studying the enzymes of the cerebrospinal fluid in health and disease.

In the sub-department of Parasitology under Dr. A. M. Fallis research on trichinosis was continued by Dr. E. Kuitunen with the support of a federal Health grant. We are grateful to the Department of Pensions and National Health for cooperative arrangements that permitted Dr. Kuitunen to spend two months last summer at Pangnirtung carrying out diagnostic tests to detect the incidence of trichinosis in the Eskimo population in that area and making a survey of the parasitic infection. She has continued her studies of the efficacy of the larval precipitin test for the diagnosis of trichinosis in relation to the time of infection.

A full report of the researches of the sub-department of Virus Infections under Dr. C. E. van Rooyen appears in the report of the Director of the School of Hygiene.

Graduate students have completed the following theses for the degree of M.A.:

Fahey, J. E. Further studies on bacteriophages for C. diphtheriae.
Gwatkin, R. B. L. Antibiotics from actinomycetes.
Hnatko, S. I. Studies on bacteriophages for the mycobacteria.

Publications

Fahey, J. E. "Preliminary observations on phage typing of *Corynebacterium diphtheriae*" (*Canadian Journal of Public Health*, vol. 43, 1952, pp. 167–70).

Hnatko, S. I. "Concentric ring formation about plaques of *M. phlei* bacteriophage" (*Canadian Journal of Public Health*, vol. 43, 1952, pp. 54–9).

Siebenmann, C. O. "Effect of BCG vaccination and chemotherapy on experimental tuberculosis in mice" (*Journal of Immunology*, vol. 67, 1951, pp. 137–49).

Siebenmann, C. O. and Zubrys, A. "Formation of 'Heinz bodies' by a thiosemicarbazone" (*Nature*, vol. 169, 1952, pp. 505–6).

Wishart, F. O., Carr, C. W., and Jackson, L. K. "Diphtheria antitoxin titres following a recall dose of diphtheria toxoid: A three-year study" (*Canadian Journal of Public Health*, vol. 43, 1952, pp. 121–7).

Wishart, F. O. and Jackson, L. K. "Tetanus antitoxin titres following a recall dose of tetanus toxoid: A three-year study" (*Canadian Journal of Public Health*, vol. 42, 1951, pp. 384–9).

Medicine

Under the direction of Professor R. F. Farquharson

The modification of the out-Patient Department of the Toronto Western Hospital and the provision of fine new quarters at St. Michael's Hospital have allowed the extension of final-year teaching in these two hospitals, with resultant decrease in the size of the teaching groups. The quarter of the class on Medicine is now divided into five groups instead of three: one at St. Michael's Hospital, one at the Toronto Western Hospital, and three at the Toronto General Hospital. This has made the instruction of each group easier and more practical but it has also increased the total teaching load of the Department.

The work of out-patient departments is changing. Many patients still walk in off the street but a great many are referred by practitioners instead of being sent into the public wards of the hospital. Under Dr. Owen's direction an attempt has been made at the Toronto General Hospital to deal with each patient as completely as possible at the first visit and, in any case, to complete useful investigations quickly so that adequate treatment can be planned and carried out promptly. Some patients are discharged almost at once; some are followed with interest for long periods. Thus the out-patient departments are taking on some of the responsibilities hitherto restricted to the wards. Morale and prestige have risen accordingly and they have become excellent places for graduate training.

This out-patient graduate training is made available to assistant residents and to graduates who wish to take advanced training in internal medicine while in active private practice. Some come immediately after one or two years of internship and others after varying periods, sometimes several years, of practice. Only those who are genuinely interested in the careful study of patients and willing to give sufficient time to do their work well and enjoy it are retained as voluntary assistants. Furthermore, to make the facilities for training available to the increasing number who desire it, these training positions can seldom be held for more than two or three years.

The formal postgraduate training in Medicine has been greatly extended since the war by making use of the excellent facilities of Sunnybrook Hospital. Almost all those taking extensive training are given a year on the excellent Medical Service there under Dr. Ian Macdonald.

A short intensive graduate course of one week's duration on the Physiological Basis for Internal Medicine was given with the help of Professors Best, Dauphinee, and Chute of the University of Toronto, Professors J. S. L. Browne and B. Rose of McGill University, and Professor Bethell of Ann Arbor, Michigan. It was attended

by seventy-nine physicians from all parts of the United States and four Canadians.

The usual advanced graduate course of seven weeks' duration was given in the fall.

The retirement of Dr. Beverley Hannah is noted with regret. Dr. Hannah's clear, practical teaching of the diagnosis and treatment of communicable diseases will be long remembered by his students.

Research

Research in the Department of Medicine has been carried on in the medical departments of the three teaching general hospitals and at Sunnybrook Hospital. The clinical and research facilities of Sunnybrook Hospital provide special opportunities for long-term research and members of the medical staff from all the teaching hospitals are collaborating in research in the D.V.A. hospital.

Dr. Metro Ogryzlo, working under a grant from the Canadian Arthritis and Rheumatism Society, has been engaged with a number of interesting problems. In conjunction with Dr. A. A. Fletcher he has continued the study of the behaviour of plasma fibrinogen in certain diseases and under varying conditions. They have continued the study of the use of ACTH and cortisone in rheumatoid arthritis, the collagen and other diseases. In particular, the nitrogen balance has been studied, and it has been shown that the effect of cortisone may be either anabolic or anti-anabolic depending on the state of the patient at the time of its administration. Working with Dr. Gornall of the Department of Pathological Chemistry, Dr. Ogryzlo has been trying to develop a more dependable assay for ACTH using patients with presumably normal adrenal function. Dr. Ogryzlo and Dr. J. Finlay have also been studying the specificity of the L.E. (lupus erythematosus) phenomenon by looking for it in a number of different diseases characterized by peculiar tissue reactions.

Dr. Wallace Graham and Dr. Donald C. Graham in association with Dr. N. Swanson, a Canadian Arthritis and Rheumatism Society research fellow, have been studying the effect of benemid in the long-term treatment of gout.

The cardiologists in all the teaching hospitals have continued to study the use of anticoagulants in coronary thrombosis, phlebothrombosis, and pulmonary embolism. Studies of the comparative value of heparin, dicoumarol, phenylindanedion, and cumopyrine have been carried out by Dr. Robert L. MacMillan and Dr. Kenneth W. G. Brown. To date none has proven to have a definitely better effect than the others in the prevention of further thrombosis.

Dr. Kenneth Brown, working both at the Toronto General Hospital and at Sunnybrook Hospital, has been studying the effect of administration of heparin twice weekly to patients with angina pectoris, as suggested by Gofman *et al.* To date no definite difference between the treated cases and the controls has been observed.

Dr. Rykert and Dr. Moran, at Sunnybrook Hospital, have begun a long-term study of atherosclerosis, in which cholesterol concentrations and the concentration of large lipprotein molecules in the plasma will be correlated with the development and progression of atherosclerotic lesions. This is part of a large long-term D.V.A. study.

Dr. Alfred Kerwin has continued his studies of vector cardiography.

Drs. W. F. Greenwood, A. D. McKelvey, and MacAllister W. Johnston have studied the effect of destruction of the thyroid gland by oral administration of radio-iodine in the relief of angina. Fourteen cases have been treated; there has been a favourable effect in all.

The cardiologists of the Department of Medicine have collaborated with Dr. John Keith, Department of Paediatrics, in a study of the effects of ACTH and cortisone in acute rheumatic fever.

Drs. Greenwood and McKelvey, working closely with Dr. Bigelow of the Department of Surgery, have been following the effects of valvulotomy in mitral stenosis.

Dr. H. E. Pugsley has been following the effects of antibiotics, and particularly

of chloramphenicol, in the prolonged treatment of bronchiectasis. He has been studying the physiological changes in patients with pneumoconiosis, pulmonary fibrosis, and emphysema.

Three aspects of the study of diabetes have been undertaken. Under Dr. W. R. Campbell's direction, Drs. W. T. W. Clarke and Barbara Hazlett have been studying physiological changes in diabetic acidosis and coma. The study of the one thousand or more diabetics attending the follow-up clinic under Dr. T. A. Crowther's direction has been pushed vigorously. Eye changes are being studied in collaboration with the Department of Ophthalmology, neurological changes and general degenerative changes in collaboration with Dr. Barnett. The study of pathological changes in the kidneys by Dr. G. W. Smith working under the supervision of Dr. H. J. Barrie of the Department of Pathology has also been continued.

Dr. MacAllister W. Johnston, also working in association with Dr. Campbell, has continued the study of thyroid function and, in particular, the influence of severe disorders of other endocrine glands on the function of the thyroid gland. He has measured the protein-bound iodine of the plasma and the ability of the thyroid gland to take up radioiodine in cases of acute thyroiditis, and has shown that there is in that disease early excessive liberation of thyroid hormone accompanied by decreased activity of the gland which frequently progresses to a myxoedematous state, then usually goes on to full spontaneous recovery. He has also been studying the effect of cortisone and other hormones in severe pituitary insufficiency and in Addison's disease.

Drs. R. C. Dickson and Paul O'Sullivan have reviewed the course of a large number of cases of gastric ulcer at Sunnybrook Hospital. Dr. J. R. Bingham has continued the study of macrocytosis in diseases of the liver and his investigations on the physiology of the gastrointestinal tract and cause of pain.

The dermatologists, under Dr. H. A. Dixon, have studied the effect of mepacrine in chronic discoid lupus erythematosus. Encouraging results are being obtained.

A study of the effect of cortisone therapy on acute self-limited dermatoses has been completed by Drs. N. M. Wrong and R. C. Smith. Dr. Dixon and Dr. R. Bremner have been studying the effects of various new remedies in the treatment of psoriasis without noting any striking success. Dr. Wrong, and his associates at the Hospital for Sick Children, have been studying a minor epidemic of ringworm of the scalp. A series of new topical remedies have been tried without success.

Dr. J. D. L. FitzGerald is continuing the study of acute nephritis and the effects of cortisone.

Dr. H. H. Hyland and Dr. Barnett have been studying the mechanism of production of symptoms in intracranial aneurysms (berry aneurysms and angiomatous malformations), and Dr. Richardson has been observing the effects of drugs to lower the blood pressure in the treatment of patients with ruptured berry aneurysms. Dr. Richardson has continued his work on hypoglycaemic and anoxic encephalopathy. Dr. A. Park has been studying methods of treatment of acutely intoxicated alcoholics. Working with Dr. Richardson, he has also made an intensive investigation of three cases with severe neurological lesions complicating serum sickness.

Dr. J. C. Sinclair has continued his work on chronic liver disease with Professor Dauphinee.

The work of all those associated with Professor Wightman is described in his report of the Department of Therapeutics.

Publications

Bardawill, C. J. and Gornall, A. G. "The influence of dietary protein on liver injury due to carbon tetrachloride in dogs" (*Canadian Journal of Medical Sciences*, vol. 30, 1952, pp. 272–83).

Barnett, H. J. M., Jackson, M. V., and Spaulding, W. B. "Thiocyanate psychosis" (*Journal of the American Medical Association*, vol. 147, 1951, pp. 1554–8).

BARRIE, H. J., ASKANAZY, C. L., and SMITH, G. W. "More glomerular changes in diabetics" (*Canadian Medical Association Journal*, vol. 66, 1952, pp. 428–31).

BINGHAM, J. R. "Liver disease in alcoholism" (*Ontario Medical Review*, vol. 18, 1951, Dec.).

———"The treatment of peptic ulcer in general practice" (*Canadian Medical Association Journal*, vol. 65, 1951, pp. 312–17).

BLANCHARD, A. J. and HETHRINGTON, H. "Malignant haemangio-endothelioma of heart" (*Treatment Services Bulletin*, vol. 7, 1952, pp. 95–105).

CLARKE, W. T. W. "Diabetes surveys" (*Ontario Medical Review*, vol. 19, 1952, Feb.).

DICKSON, R. C. "Ambulant treatment of gastrointestinal disease in industry" (*Ontario Medical Review*, vol. 18, 1951, pp. 50–2).

FARQUHARSON, R. F. "Physical manifestations of common emotional disorders" (*Medical Clinics of North America*, March, 1952, pp. 457–70).

———"Simmonds' disease (Simmonds' syndrome; extreme insufficiency of the anterior lobe of the pituitary gland)"; in *Cyclopedia of Medicine, Surgery and Specialties*, vol. 10, 1952, pp. 669–77. Philadelphia: S. A. Davis Company.

GORNALL, A. G. and BARDAWILL, C. J. "The study of liver function in dogs" (*Canadian Journal of Medical Sciences*, vol. 30, 1952, pp. 256–71).

GRAHAM, D. C., FLETCHER, A. A., and GRAHAM, W. "The natural course of ankylosing (Marie-Strümpell) spondylitis and its response to treatment"; in *Rheumatic Diseases*, pp. 83–7. Philadelphia: W. B. Saunders Company. 1952.

GRAHAM, W. "Arthritis and rheumatism in industry" (*Ontario Medical Review*, vol. 18, 1951, pp. 39–41).

HAIR, H. C. "Effects of cortisone on a case of exfoliative dermatitis" (*Treatment Services Bulletin*, vol. 6, 1951, pp. 478–80).

HYLAND, H. H. "Disturbances of sleep and their treatment" (*Medical Clinics of North America*, March, 1952, pp. 539–55).

HYLAND, H. H., WATTS, G. O., and FARQUHARSON, R. F. "The course of subacute combined degeneration of the spinal cord" (*Canadian Medical Association Journal*, vol. 65, 1951, pp. 295–302).

JOHNSTON, M. W., SQUIRES, A. H., and FARQUHARSON, R. F. "The effect of prolonged administration of thyroid" (*Annals of Internal Medicine*, vol. 35, 1951, pp. 1008–22).

KERR, R. B., BROWN, G. D., and KALANT, N. "Juvenile diabetics" (*Canadian Medical Association Journal*, vol. 66, 1952, pp. 97–104).

MACDONALD, R. I. "The care of older people" (*Medical Clinics of North America*, March, 1952, pp. 569–83).

———and FARQUHARSON, R. F. "Emotional manifestations associated with structural disease" (*Medical Clinics of North America*, March, 1952, pp. 471–83).

MACKENZIE, D. J. "Effect of cortisone on diffuse pulmonary fibrosis—interim report" (*Treatment Services Bulletin*, vol. 6, 1951, pp. 475–7).

———"Therapeutic effects of cortisone in a case of idiopathic steatorrhoea"; abstract (*Proceedings of the Royal College of Physicians and Surgeons of Canada*, 1951, p. 8).

MACMILLAN, R. L., EZRIN, C., and BUTLER, A. "Prothrombin consumption in haemophiliac kindred" (*Journal of Clinical Pathology*, vol. 4, 1951, pp. 460–3).

MALTBY, E. J. "Prognosis in ulcerative colitis"; abstract (*Proceedings of the Royal College of Physicians and Surgeons of Canada*, 1951, pp. 7–8).

NANCEKIVELL, A. F. and MACDONALD, R. I. "Epidemic haemorrhagic fever" (*Treatment Services Bulletin*, vol. 7, 1952, pp. 49–53).

OGRYZLO, M. A. "ACTH and cortisone—their clinical and metabolic effects" (*Journal of the Canadian Dietetic Association*, vol. 13, 1951, pp. 12–13, 30–1).

OGRYZLO, M. A. and GORNALL, A. G. "Observations on the oral administration of cortisone acetate" (*Canadian Medical Association Journal*, vol. 66, 1952, pp. 44–8).

OILLE, J. A. and OILLE, W. A. "Pain or distress wrongly attributed to the heart" (*Medical Clinics of North America*, March, 1952, pp. 501–13).

OILLE, W. A. "Auriculo-ventricular block of forty years' duration abolished by vagus section"; abstract (*Proceedings of the Royal College of Physicians and Surgeons of Canada*, 1951, pp. 4–5).

———"Heart disease and work" (*Ontario Medical Review*, vol. 18, 1951, pp. 42–4).

Owen, T. "Emotional maladjustment of the employee" (*Ontario Medical Review*, vol. 18, 1951, pp. 37–8).

———"The physiology of psychotherapy" (*Medical Clinics of North America*, March, 1952, pp. 447–56).

Paterson, J. F. "Disappointing results of pulmonary resection for bronchiectasis" abstract (*Proceedings of the Royal College of Physicians and Surgeons of Canada*, 1951, pp. 10–11).

Peller, J. A. and Gunton, R. W. "Death following injection of sodium morrhuate" (*Canadian Medical Association Journal*, vol. 65, 1951, pp. 473–5).

Pugsley, H. E. "Pulmonary arteriovenous aneurysms"; abstract (*Proceedings of the Royal College of Physicians and Surgeons of Canada*, 1951, pp. 5–6).

Richardson, J. C. "Psychic aspects of cerebral attacks" (*Medical Clinics of North America*, March, 1952, pp. 557–68).

St. Pierre, R. and Bryant, A. J. S. "Clinical aspects of sarcoidosis" (*University of Toronto Medical Journal*, vol. 29, 1951, pp. 103–12).

Squires, A. H. and Cannell, D. E. "The menopausal patient" (*Medical Clinics of North America*, March, 1952, pp. 515–25).

Walters, J. A. "Pain and suffering" (*Medical Clinics of North America*, March, 1952, pp. 485–500).

Walters, J. A., Slade, H. C., and Graham, W. "The rôle of psychological factors in fibrositis"; in *Rheumatic diseases*, pp. 108–12. Philadelphia: W. B. Saunders Company. 1952.

Wightman, K. J. R. "Chemotherapy of lymphomatous disorders"; abstract (*Proceedings of the Royal College of Physicians and Surgeons of Canada*, 1950, pp. 10–11).

Wrenshall, G. A., Bogoch, A., and Ritchie, R. C. "Extractable insulin of pancreas: Correlation with pathological and clinical findings in diabetic and nondiabetic cases" (*Diabetes*, vol. 1, 1952, pp. 87–107).

Obstetrics and Gynaecology

Under the direction of Professor D. E. Cannell

The Department, the Faculty of Medicine, the University, and the medical profession suffered a great loss in the sudden death of Professor Emeritus H. B. Van Wyck on March 11, 1952. The late Dr. Van Wyck had been associated with this Department in some capacity since 1921. In the four years in which he occupied the chair great progress was made in the teaching and organization of the Department. His professional achievements were only one measure of his contributions to medicine, his chosen specialty, and the University. His cheerful and ever-willing assistance and advice will be sorely missed by his colleagues.

The usual programme of teaching Obstetrics and Gynaecology to undergraduates and postgraduate students has been carried out throughout the past year. In the session 1952-3, through the co-operation of the Department of Paediatrics, smaller groups of students will spend a continuous period of four weeks in Obstetrics and Gynaecology. This, it is hoped, will result in more individual attention being given to the final-year students, with greater opportunity for clinical teaching. The revised course in the third year will be improved by the greater use of visual aids in teaching together with the freer use of manikins. This has been made possible by additional allowances for such equipment. The number of lectures has been reduced and theatre clinics will be utilized to illustrate more fundamental but commonplace problems in obstetrics and gynaecology.

The Department is pleased to announce the award of the Fellowship in the Royal College of Surgeons of Canada to Dr. W. H. Allemang. Dr. Allemang is presently pursuing further postgraduate studies with Dr. John Stallworthy at the Radcliffe Infirmary, Oxford, England. He has been awarded a McLaughlin Fellowship for 1952-3 and will visit other clinics in Great Britain and Europe in 1953.

Dr. J. G. Solmes has been appointed a clinical teacher and attached to the staff of St. Michael's Hospital.

The recently established clinic for pregnant diabetic patients has made rather slow progress owing to the scarcity of clinical material. The setting up of a laboratory at the Hospital for Sick Children for hormone studies upon this group of patients has been made possible by a grant from the Insulin Committee and by the co-operation of Professor Chute and colleagues. This will enable the clinicians in charge to place hormone therapy on a sound basis and should advance our knowledge of this complication of pregnancy. Drs. J. W. Rogers and W. Clarke (Department of Medicine) are co-operating in this problem.

Dr. Donald J. Van Wyck in conjunction with the Department of Medicine is studying the late post-partum course of patients suffering from the acute toxaemias of pregnancy.

The joint staff meetings of the three University hospitals have been held as usual. These have again proven their usefulness in providing an opportunity for all to become acquainted with procedures which are not common to all institutions.

Postgraduate lectures and teaching have been provided by members of the Department for the advanced refresher course, the Medical Alumni course, and the Kellogg Foundation extension teaching programme. The latter has proven useful and enjoyable for the teachers and participants.

Among the distinguished visitors to the Department were Mr. G. F. Gibberd of Guy's and Queen Charlotte's Hospitals, London. Mr. Gibberd spoke to members of the staff and other interested physicians on "Puerperal Sepsis: Changes in the Clinical Picture 1936-1950."

Many conventions and meetings were addressed by members of the Department during the past year. The third meeting of the Interurban Society of Obstetricians and Gynaecologists was held in Toronto, October 13, 1951. Members of the Department taking part in the programme were Drs. W. G. Cosbie and D. N. Henderson. This meeting was most satisfactory. The late Professor Emeritus H. B. Van Wyck addressed the dinner meeting of this society on "British and American Humour" in his own inimitable fashion which occasioned much enthusiasm on the part of our visitors. Dr. D. N. Henderson presented a paper on "The Histologic Study of the Cervix Uteri" with Dr. Crawford B. Shier at the sectional meeting of Obstetrics and Gynaecology of the Royal College of Physicians and Surgeons at Quebec. Dr. W. G. Cosbie presented a paper on "The Fate of the Patient with Advanced Cancer of the Cervix of the Uterus" at the annual meeting of the Canadian Association of Obstetricians and Gynaecologists, and one on "The Treatment of Cancer of the Vulva" at the annual meeting of the American Association of Obstetricians, Gynaecologists and Abdominal Surgeons. Dr. Cosbie has been elected a Fellow of the Association for the latter presentation.

Dr. D. E. Cannell and Dr. W. G. Cosbie took part in the proceedings of the Fifth American Congress of Obstetrics and Gynaecology in Cincinnati in April. Dr. Cannell addressed the Western Ontario Society of Obstetricians and Gynaecologists in London on the topic of "Post-Partum Haemorrhage." Dr. W. G. Cosbie took part in the programme of the Ontario Medical Association in Hamilton this spring. Dr. L. T. Armstrong presented a paper on "Common Obstetrical Difficulties" before the annual meeting of the Canadian Medical Association in Montreal.

The Head of the Department is grateful for the loyal and conscientious assistance he has received from the staff and voluntary assistants in the past year.

Research

Members of the staff have undertaken the following research work:

The Rh committee under the chairmanship of Dr. Philip Greey with Dr. D. M. Low representing the Department and in co-operation with Dr. W. L. Donohue and

colleagues of the Hospital for Sick Children have collected and summarized the results of an extensive experience with this complication of pregnancy. This report will be available for publication early in 1953. The study has been made possible by a grant from the Banting-Best Research Foundation and has been carried out principally by Drs. Donohue and Margaret Mullinger.

Dr. Crawford B. Shier has continued the cytological and biopsy examination of treated cases of carcinoma of the cervix. The number of cases is still too small for any valid conclusions to be drawn in regard to their usefulness as a prognostic measure in therapy.

Dr. D. M. Low in conjunction with Dr. E. Horne has been studying the effect of DHE 45 (Sandoz) on the course of labour in selected primiparous patients.

Dr. J. C. Goodwin has presented the results of his studies on the use of the ischiocavernosus muscle in the relief of urinary stress incontinence to the Canadian Association of Obstetricians and Gynaecologists.

A graduate student, Dr. J. Harkins, has completed the initial portion of a study under Professor A. G. Gornall on the adrenal function during pregnancy; this work will be continued by Dr. W. G. Dobson during the coming year.

Dr. W. A. Dafoe, at the Wellesley Hospital, has been studying plasma glutamic acid levels in malignancy under the direction of Professor E. W. McHenry of the Department of Public Health Nutrition in the School of Hygiene. In conjunction with Professor George Wright, Department of Chemistry, he has also been studying the possibilities of a spectroscopic assay of pregnanediol.

Publications

Armstrong, L. T. "Obstetrical problems in general practice" (*Canadian Medical Association Journal*, vol. 65, 1951, pp. 221–5).

Cannell, D. E. "The detection of gynaecological cancer" (*Vancouver Medical Association Bulletin*, June, 1951).

———"Dysmenorrhea" (*Manitoba Medical Review*, vol. 31, no. 8, Oct., 1951, pp. 514–15).

———"The management of the menopause" (*Vancouver Medical Association Bulletin*, June, 1951).

———"Post-partum haemorrhage" (*Vancouver Medical Association Bulletin*, June, 1951).

Cannell, D. E. and Squires, A. H. "The menopausal patient" (*Medical Clinics of North America*, vol. 36, no. 2, March, 1952, pp. 515–25).

Cosbie, W. G. "The factors which influence the prognosis in cancer of the cervix" (*Transactions of the International and Fourth American Congress on Obstetrics and Gynaecology*, vol. 61A, June, 1951, pp. 647–53).

———"The fate of the patient with advanced cancer of the cervix of the uterus" (*American Journal of Obstetrics and Gynaecology*, vol. 63, no. 1, Jan., 1952, pp. 108–15).

———"The treatment of cancer of the vulva" (*ibid.*, vol. 63, no. 2, Feb., 1952, pp. 251–7).

Henderson, D. N. "The malignancy of special ovarian tumors" (*Transactions of the American Gynaecological Society*, vol. 74, 1951, pp. 126–36).

———"Special ovarian tumors associated with change in sexual characteristic" (*Proceedings of the Royal College of Physicians and Surgeons of Canada*, 1950, pp. 29–30).

Henderson, D. N. and Shier, C. B. "Histologic study of the cervix uteri" (*Proceedings of the Royal College of Physicians and Surgeons of Canada*, 1951, pp. 26–7).

Ophthalmology

Under the direction of Professor A. J. Elliot

The session 1951-2 was an active one for the Department of Ophthalmology. There were 13 postgraduate students registered for formal training during the session. Dr. J. F. Ballantyne, Galt, Ontario; Dr. L. A. Lloyd, Toronto; and Dr. J. W. More-

side, Bedeque, P.E.I., were appointed Hermant Fellows in Ophthalmology. Dr. H. S. Welsman was provided with a grant under the Defence Research Board. Four students completed their three-year postgraduate studies and will commence the practice of ophthalmology in various parts of Canada. Mr. E. D. Wigle, Windsor, was awarded an ophthalmoscope donated by the J. F. Hartz Company as a prize for attaining the highest mark in ophthalmology in the third year.

The Department was again the recipient of federal health grants for "Ocular diseases of virus aetiology" under the direction of Dr. H. L. Ormsby and for "Prevention of blindness from glaucoma" under the direction of Dr. T. H. Hodgson. The eye bacteriology laboratory and the glaucoma services continued to grow and were of service to the University hospitals and the profession at large. Drs. R. K. MacDonald and W. P. Callahan joined the staff after a year of postgraduate study abroad to do research on the glaucoma service and in the glaucoma laboratory.

Dr. A. J. Elliot participated in a round table conference on "The Place of Surgery in Hypertensive Diseases" in Montreal at the meeting of the Canadian Medical Association. Dr. H. L. Ormsby spoke to the Medical Alumni Association on "Common Infections of the Eye"; he also reported before the Pan-American Association of Ophthalmology in Mexico City original research work on "Clinical and Experimental Studies on Herpes Corneae Employing Cortisone Acetate." Drs. T. H. Hodgson, A. E. MacDonald, J. C. Hill, M. Shusterman, O. B. Richardson, and A. L. Morgan presented papers at the Canadian Ophthalmological Society meeting and their subjects are noted in the list of publications. Dr. Clement McCulloch contributed to a symposium on "Hereditary Eye Diseases" at the Pan-American Association of Ophthalmology in Mexico City.

The Department was honoured by visiting lecturers: Mr. Wellwood Ferguson, F.R.C.S., Sheffield, England, spoke on "Clinical Application of the Light and Dark Adaptation Phenomena" and Dr. Franklin Foot, Executive Director of the National Society for the Prevention of Blindness, New York City, showed a film, "Glaucoma for General Practitioners."

The following postgraduate students gave papers at the Academy of Medicine, Section of Ophthalmology, during the past session: Dr. L. A. Probert reported a genetics study on "Spherophakia with Bradydactyly"; Dr. C. D. Baird presented a pathological report on "Carcinoma in Situ of Cornea and Conjunctiva"; Dr. Davidson Black reported three cases of Moebius syndrome; Dr. R. G. Murray discussed his results on "Anterior Chamber Puncture Diagnosis"; Dr. R. W. Robertson surveyed the results of 180 retinal detachment operations.

The Department supported a refresher course on Eye Surgery in the spring which proved to be very successful. The guest surgeons were Dr. D. B. Kirby, New York City, and Mr. T. Keith Lyle, F.R.C.S., London, England. The instruction was given by means of lectures, operative clinics on patients, and cadaver surgery in small groups. The registration was limited to 30 and unfortunately a large number of applications over this number could not be accepted as it was felt a greater number could not be handled satisfactorily in a practical course in eye surgery.

Dr. W. R. F. Luke provided lectures in diseases of the eye to the students in the School of Social Work. Dr. Clement McCulloch lectured to the second-year medical students on the physiology of the aqueous, lens, and cornea as part of their general course in Physiology. Dr. H. L. Ormsby lectured on eye bacteriology and virus diseases of the eye in the general Bacteriology course.

The work of the eye pathology laboratory progressed well during the past year under the direction of Dr. O. B. Richardson. The Department gratefully acknowledges the large number of eye pathology specimens sent in by the members of the profession. The laboratory served as a centre for postgraduate instruction in eye pathology.

Several instructional ocular moving picture films on eye surgery were completed by Drs. J. C. Hill and H. M. Macrae.

Research

Members of the staff have undertaken the following research work. Dr. A. J. Elliot conducted a clinical study into the visual results in carotid-cavernous fistulae in co-operation with the Division of Neurosurgery, Toronto General Hospital. This work was reported before the Cleveland Ophthalmological Club and the Canadian Ophthalmological Society. Dr. A. L. Morgan continued his studies into visual defects in children working under a National Health grant. Dr. J. S. Crawford made a clinical study of proptosis in children. Dr. H. M. Macrae with Dr. R. W. Robertson made a statistical study of 180 retinal detachment operations. Dr. H. L. Ormsby with Drs. G. G. Cousineau and L. A. Lloyd made a survey of ophthalmia neonatorum for presentation at the meeting of the Canadian Medical Association. Dr. Ormsby also studied with Drs. G. Dempster and C. E. van Rooyen the effect of cortisone on experimentally induced herpetic keratitis in the rabbit. He also reported his work on ACTH and cortisone before the National Research Council Advisory Committee. Dr. Ormsby, associated with Dr. Ann Fowle and Miss R. Thomasson, attempted to isolate a virus from cases of acute epidemic keratoconjunctivitis in the Windsor area. These studies were made in association with Drs. C. E. van Rooyen, A. J. Rhodes and R. C. Parker. At the present time a study of topically applied compound F in infective diseases of the eye is in progress under Dr. Ormsby's direction. Dr. Clement McCulloch continued his study of the anatomy of the zonule of the human eye. Dr. T. H. Hodgson with Dr. Maria Arstikaitis studied the effect of lobotomy and electroshock on intraocular pressure and reported their results before the East-Central Section of the Association for Research in Ophthalmology. Dr. Hodgson is investigating the relative merit of cycloelectrolysis and cyclodiathermy in the treatment of the more intractable cases of glaucoma. Dr. W. P. Callahan, with the assistance of Miss S. Hennighausen, has been working out a method applying the technique of paper chromatography to the estimation of amino acids in aqueous humour in normal and glaucomatous eyes. Dr. Keith MacDonald has been studying the fluctuation in the rate of flow of aqueous humour in the eyes of patients with glaucoma using the instillation fluorescein method.

Under the direction of Dr. H. L. Ormsby, Dr. J. F. Ballantyne surveyed the sensitivity to antibiotics of all pathogenic staphylococci recovered from eye cultures in the eye bacteriology laboratory. Dr. R. G. Murray completed a study of the cytology and bacteriology of the aqueous exudate in uveitis. Under Dr. Clement McCulloch's direction Dr. H. S. Welsman undertook research pertaining to visibility when flying at high altitudes and at high speeds. This work was assisted by a grant from the Defence Research Board and will be presented at a meeting of the United States Armed Forces–National Research Council, Vision Committee.

Publications

Hill, J. C. "Experiences with curare anaesthesia in cataract surgery" (*Transactions of the Canadian Ophthalmological Society*, 1951, p. 51).

———"Modern treatment for squint in children" (*Modern Medicine of Canada*, vol. 7, no. 5, p. 27).

Hodgson, T. H. "Glaucoma"; chart (*Ontario Medical Review*, vol. 18, no. 7, Sept., 1951, p. 51).

———"The glaucoma clinic: Its purpose and organization" (*Transactions of the Canadian Ophthalmological Society*, 1951, p. 15).

Kelly, R. G. C. "Nursing care in diseases of the eye" (*Canadian Nurse*, vol. 47, no. 7, July, 1951, p. 483).

Lloyd, Miss L. A. "A case of cerebral hemorrhage with subsequent hemorrhages from increased intracranial pressure" (*University of Toronto Medical Journal*, vol. 29, no. 2, Nov., 1951, p. 73).

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MacDonald, R. K. "Effect of cortisone on the permeability of the blood-aqueous barrier to fluorescein" (*British Journal of Ophthalmology*, vol. 35, no. 11, Nov., 1951, p. 730).

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Shirley, S. Y. and Robertson, R. W. "Experimental retinal detachments and the use of physiological glue in rabbits' eyes" (*American Journal of Ophthalmology*, vol. 35, no. 4, April, 1952, p. 56).

Shusterman, M. "Toxoplasmosis in the Toronto area" (*Transactions of the Canadian Ophthalmological Society*, 1951, p. 75).

Smith, C. G. and Baird, C. D. "Survival time of retinal cells when deprived of their blood supply by increased intraocular pressure" (supplement to *American Journal of Ophthalmology*, vol. 35, no. 5, part II, May, 1952, p. 133).

Oto-Laryngology

Under the direction of Professor P. E. Ireland

The most outstanding events of the 1951-2 session were the meetings of the four major American societies in our specialty, and the meeting of the American Board of Otolaryngology, in our city. The fact that Toronto was chosen as a meeting place was flattering to our Department and showed a distinct deference to the specialty of Oto-Laryngology in Canada. The first week was occupied by the examinations of the American Board with clinical examinations at the Toronto General Hospital and St. Michael's Hospital. Candidates came from all over Canada and the United States and military personnel were flown from Korea, England, and Germany. The letters received from responsible officials of the Board were very complimentary as to the arrangements and the variety of clinical material available.

In the second week were held successive meetings of the American Otological Society, the American Triological Society, the American Broncho-Oesophagological Society, and the American Laryngological Society. Those from other departments who took part in the programmes were: Professors J. C. B. Grant and C. E. van Rooyen, Dr. F. G. Kergin, Dr. K. G. McKenzie, Dr. H. Botterell. Our own Department also took an active part. At the American Otological Society, Dr. D. E. S. Wishart presented a paper on "The Problem of Hearing Defects in Children." At the American Triological Society, Dr. P. E. Ireland and Dr. H. O. Barber reported on "Residual Hearing Following Partial Resection of the Eighth Nerve"; Dr. D. E. S. Wishart presented a paper on "The Future of Otolaryngology" and Dr. J. A. Sullivan and Dr. S. Hughes one on "The Investigation of Paracusis Willisiana." At the American Broncho-Oesophagological Society, Dr. G. A. Henry discussed "Traumatic Stenosis of the Trachea." At the American Laryngological Society Dr. H. W. D. McCart presented a paper on "The Place of Tracheotomy in Head Injuries" and Dr. D. E. S. Wishart one on "Bronchography in Children."

The members of the staff have taken part in many programmes. At the Canadian Otolaryngological Society meeting, Murray Bay, the following papers were given: Dr. P. E. Ireland and Mr. W. E. Hodges on "The Problem of Noise in Industry"; Dr. G. A. Henry on "Traumatic Rupture of the Trachea"; Dr. H. W. D. McCart, "Carcinoma of the Larynx"; Dr. J. A. Sullivan (movie) "The Treatment of the Chronic Ear"; Dr. D. E. S. Wishart on "Aberrant Subclavian Artery with Oesophageal Stenosis"; Dr. J. B. Whaley, "Lye Atresia of the Oesophagus with Unusual Abscess"; Dr. B. W. Fearon, "Laboratory Methods of Outlining Bronchial Segmentation." At the meeting of the Eastern Section of the American Triological Society, New York City, Dr. H. W. D. McCart read a paper on "Fibrous Dysplasia" and to the Central Section, Atlanta, Georgia, Dr. J. A. Sullivan reported on "Recent Advances in the Treatment of Facial Paralysis and Bell's Palsy." Dr. D. E. S. Wishart had the distinction of being the first Canadian to give the Herbert Birkett Memorial Lecture at McGill University. His subject was "A Critique of the Methods of Testing Hearing." Dr. J. A. Sullivan presented a research problem from the R.C.A.F. at the Aero-Medical Association Meeting in Washington, on "The Statistical Study of the Relation of the Ear between Pure Tones and the Whispered Voice." At a meeting of the Ontario Medical Association, Hamilton, Dr. D. P. Bryce spoke on "Dysphagia," Dr. Douglas Bell on "Hoarseness," and Dr. Page Statten on "Acute Tracheobronchitis in Children." Dr. H. W. D. McCart took part in a symposium at the Teachers' Section of the American Academy of Ophthalmology and Otolaryngology, Chicago, on "The Scope of Otolaryngology." Dr. P. E. Ireland examined on the American Board of Otolaryngology in Richmond, Virginia, and Chicago.

Graduate and undergraduate teaching still is the main purpose of this Department. During the past session three more of our graduate students were successful in the Fellowship examinations of the Royal College of Physicians and Surgeons. At the present time no one from any other graduate course has been successful in this examination in our speciality. Two of those successful were from our own undergraduate group and one was a graduate of the University of Western Ontario. Of our two students Dr. H. O. Barber will join the staff of the Toronto General Hospital and Dr. Brydon Smith will join that of St. Michael's Hospital. Of the others completing the graduate course this year, Dr. Terence Maloney has returned to Dublin to sit the examination of the Royal College of Surgeons, England, and Dr. G. A. Badger has returned to Vancouver to join the staff of the University of British Columbia and the Vancouver General Hospital. For the next two years there will be graduate students from Calcutta, India, and Beirut, Lebanon.

The postgraduate refresher course was given during the winter months in Broncho-Oesophagology for a two week period. One student over the proposed limit was accepted for instruction. This was the first time such a course was given in any Canadian medical school and it was well received. Dr. Louis H. Clerf of Temple University, Philadelphia, was the guest speaker.

This report would not be complete unless it said that we regret the retirement of Dr. D. E. S. Wishart from the position of Assistant Professor and Chief of Otolaryngology at the Hospital for Sick Children. It is some measure of relief that he will continue as a graduate lecturer and with his work on the hearing problems in children. Dr. J. A. Sullivan has been appointed to the Board of Governors of the University of Toronto and this must be considered a great honour to our Department. Dr. Howard Burnham also retires after twenty-five years of faithful service during which he has produced many useful contributions to research.

Research

Members of the staff have undertaken the following research work:

Dr. J. Brydon Smith has continued his research with Professor A. W. Ham in the Department of Anatomy. This is largely on experimental studies of bone regeneration.

Dr. H. O. Barber has completed his clinical research problem on residual hearing following partial resection of the eighth nerve. Results of this work were presented in May to the American Triological Association.

Dr. D. E. S. Wishart continues with the research problem of the assessment and treatment of hearing loss in children. He is also engaged in work on better diagnostic procedures to aid the paediatrician and surgeon in the analysis of chest diseases in children.

Dr. C. A. Rae and staff at Sunnybrook Hospital are conducting a clinical survey of the prognosis of nerve deafness in patients who are veterans of World War II.

Dr. E. J. Stark is again associated with Professor J. K. W. Ferguson in the further assessment of local anaesthetics.

Publications

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Henry, G. A. "Traumatic rupture of the trachea" (*Canadian Medical Association Journal*, vol. 64, no. 2, Feb., 1951, p. 134).

Ireland, P. E. "The problem of noise in industry" (*Transactions of the Canadian Otolaryngological Society*, 1951).

McCart, H. W. D. "Carcinoma of the larynx" (*Transactions of the Canadian Otolaryngological Society*, 1951).

Sullivan, J. A. "Causes of failure in the fenestration operation" (*Transactions of the American Academy of Ophthalmology and Otolaryngology*, July-Aug., 1951).

Wishart, D. E. S. "Aberrant subclavian artery with oesophageal stenosis" (*Transactions of the Canadian Otolaryngological Society*, 1951).

———"Rhinology in children" (*Laryngoscope*, vol. 61, no. 10, Oct., 1951).

Paediatrics

Under the direction of Professor A. L. Chute

Professor Alan Brown who has headed the Department of Paediatrics with such distinction for many years retired in November, 1951.

With the transfer to the new Hospital for Sick Children, the possibility of increasing bedside teaching has been given considerable thought. Commencing in the fall of 1952, the teaching programme will include clinical clerkships, and a tutorial type of instruction with fewer didactic lectures.

Postgraduate education also is receiving considerable attention. A very successful refresher course was held for over 300 general practitioners in February of this year.

It is hoped to continue postgraduate education in the field of paediatrics by means of a small hospital bulletin which will be published bi-monthly.

Research continues to be an important feature of the work carried on in the Department as indicated in the reports which follow.

Research

Under a grant from the Canadian Life Insurance Officers Association, Professor A. L. Chute, with the assistance of Colin Cameron, has continued the study on the processes of aging. The chief problem has been the effect of ACTH and cortisone on the development of atherosclerosis in the rabbit fed cholesterol.

Under a National Research Council grant Dr. C. P. Rance has continued the study on the effect of ACTH and cortisone on the nephrotic syndrome. Of 37 patients loss of oedema has occurred in about 80 per cent and loss of both oedema and proteinuria in approximately 50 per cent. Prolongation of therapy appears to be of value in rendering the urine protein-free. Under a grant from the Canadian Life Officers Association, Drs. Silverthorne, Rhodes, McNaughton, Crawford Anglin,

and Sylvia Shields have continued work on poliomyelitis. Observations on non-paralytic poliomyelitis have been continued in an effort to discover clinical means of differentiating this disease from Coxsackie and other infections of the nervous system. Virus isolation from the stools of patients has so far proven the only definite means of differentiation.

The influence of factors such as immunization procedures, injections, and tonsillectomy on the development of poliomyelitis and localization of paralysis was studied. No significant relationship between injection and localization of paralysis to the region injected was noted. As previously shown, the development of bulbar disease in a recently tonsillectomied patient is highly probable if such a patient contracts poliomyelitis.

During the course of the year, funds from the federal Public Health research grants have enabled Drs. Roy, McNaughton, and Krieger to follow carefully and evaluate the results of therapy in all cases of purulent meningitis admitted to the Hospital for Sick Children. Combined clinical laboratory study has been made in an attempt to determine the part that chloramphenicol might have in the treatment of patients with such meningitis. The optimal use that may be made of this drug from the point of view of route of administration, type of preparation, and dosage of drug has been determined. Rectal administration of the drug was found of little use, and chloramphenicol in the dosage of 20 mgm. per lb. (maximum 1 gram) every 6 hours either intramuscularly or orally appears to be the optimal dosage in the treatment of influenzal meningitis. Chloramphenicol C.S.F. levels appear to be about 25 per cent of the blood serum levels.

Drs. C. E. Snelling, Laski, and Darte, in conjunction with Dr. Donohue of the Department of Pathology, Hospital for Sick Children, have continued observations on leukaemia, including the therapeutic effects of antifolic acid compounds, ACTH, and cortisone. It has been found that different brands and lots of ACTH and cortisone frequently have different quantitative effects. Under the direction of Dr. S. H. Jackson, chromatographic fractionation of urinary steroids in leukaemia has revealed a pattern of steroid excretion that varies distinctly from the normal. Investigations designed to determine whether this abnormal pattern is peculiar to leukaemia or whether it is also found in other diseases are under way. Chemical studies are also being conducted to identify the abnormal urinary steroids. These leukaemia studies have been aided by grants from (1) the Ontario Cancer Treatment and Research Foundation; (2) the National Research Council of Canada from funds made available by the Department of National Health and Welfare from National Health grants; (3) the National Cancer Institute of Canada. A further follow-up study on erythroblastosis foetalis is being made.

Drs. J. H. Ebbs, Sass-Korstak, and Orlandini have completed work on the serum gamma globulin levels in infancy. Further work has been carried out on the changes in the liver association with injections. Dr. Ebbs has completed his work, supported by a Public Health research grant, on the height and weight of Toronto school-children. The material is now being studied in co-operation with the Dominion Bureau of Statistics.

Further studies on intestinal phosphatase made by Dr. S. H. Jackson have shown that the increased amount of phosphatase found in the intestinal mucosa during the absorption of fat and protein is not related to the flow of bile. With the support of a grant from Canada Packers, a long-term observation on the retention of ingested fluorine will be terminated shortly. Studies on the retention of protein from meat have shown that while drying raw meat will increase the nutritive value of the protein, cooking the meat under pressure decreases its nutritive value in this respect. In co-operation with the Department of Obstetrics studies have been started on the hormonal balance in diabetic mothers.

In co-operation with the Faculty of Dentistry and under a grant from the Sugar Research Foundation, Drs. M. A. Cox and S. H. Jackson have initiated a study on

the relationship between blood and salivary urea and the possible relationship between salivary urea and dental caries.

Intensive work on various aspects of tuberculosis is still being carried on by Dr. Gladys Boyd with the aid of a Public Health grant. In addition to the drugs previously studied, and still being followed, viomycin has been investigated. Many cases of trachiobronchial tuberculosis have been investigated with the bronchoscope and by bronchographic study. Pulmonary resections have been done on twelve such cases which did not respond to medicinal treatment alone.

Dr. Turner has continued the study of respiratory metabolism in both normal and abnormal cases. His observations have helped in establishing a diagnosis in difficult cases, and in assessing respiratory function in surgical cases.

An adequate follow-up study of long-standing bronchiectatics, consisting of clinical assessment, radiographic and electrocardiographic functional studies, is being carried out and promises interesting results.

Dr. Andrew Hunter has completed the development of a new and convenient method for the colorimetric determination of histidine, and has examined the extent to which this method is affected by other amino-acids and by urinary constituents. Procedures are now being elaborated whereby the method may be applied to the determination of histidine in urine and other biological fluids.

Drs. John Ross, H. Edwards, and Collins-Williams are comparing the high dosage method of treating asthma, hay fever, and other allergic conditions with the low dosage method recently advocated by some allergists. The importance of mould and bacterial sensitivity in allergic cases is under investigation. Alternaria and hormodendrum moulds have been shown to have considerable importance as causative factors in allergic conditions in children.

The analysis of the 1,000-family food record, each one week in length, kept at six monthly intervals by 393 families has been completed by Miss P. J. Hames working on a Public Health research grant under the direction of Dr. Elizabeth Chant Robertson. The amounts of calcium, riboflavin, thiamine, and ascorbic acid obtained by these families have been calculated and compared with the amounts recommended for the maintenance of good nutritional status. By altering some of their buying practices, most of these families could provide palatable meals that are excellent nutritionally but no higher in cost.

During the past year, three lines of investigations have been pursued by Dr. John Keith.

1. A special study, both clinical and post-mortem, is being made of transposition of the great vessels. Some sixty hearts examined at post mortem have been studied in detail, and record kept of the thickness of the ventricles, associated defects, size of the aorta and pulmonary artery, heart weight, X-ray size in comparison with heart weight, and the distribution and arrangement of the coronary vessels. This information was associated with the clinical findings, the cyanosis, the X-ray size and shape, and the angiograms. Special attention has been paid to the percentage saturation of oxygen in the arterial blood, in infants suffering from transposition of the great vessels. Estimations were made at rest, with exercise or crying, with the baby awake, with the baby asleep, and with the administration of oxygen. All these studies have been orientated towards the possibility of surgical treatment of transposition of the great vessels. In co-operation with us, Dr. Sirek has transposed the great vessels of several normal hearts at post mortem and we have together reviewed the technique involved. Detailed recordings of the interarterial pressures during surgery in the operating room have been made on three or four occasions, covering a period of several hours. At the same time, the percentage saturation of the oxygen in arterial blood has been determined by means of a direct reading oximeter. Simultaneously continuous electrocardiograph tracings were made and related to the surgical procedures progressing.

2. Aided by a grant from the Canadian Arthritis and Rheumatism Society, the

first stages of a study on rheumatic fever and the use of cortisone, ACTH, and salicylates have been carried out. All three appear to have beneficial effect on the disease, especially on the minor symptoms. However, the heart size and heart murmurs did not appear to be affected significantly by either the hormones or salicylates. Rebounds or recurrences of activity of the disease process rarely occurred after the administration of salicylates, whereas such episodes were common when ACTH or cortisone therapy was stopped. Such recurrences may be associated with a serious exacerbation of active heart disease. This study is continuing.

3. The study of the prevalence of various forms of congenital heart disease and rheumatic fever in the school-children of Toronto has continued, and Dr. John Gardiner has continued a second round of examinations of the school-children of Toronto. His figures are being tabulated and will be available in the next few months.

Assisted by a Public Health research grant, Dr. W. A. Hawke and Dr. Mary Eddis have continued the investigation of the psychological factors in diabetes. The reaction of the parents and children to the diagnosis of the disease and the general methods used in the initial teaching of the parents and children about the disease have been studied in an attempt to improve the control of the diabetes and to reduce the emotional problems associated with it.

Studies also have been carried out on the emotional problems associated with poliomyelitis. They have been concerned with the effect of hospitalization on the child and its family and the psychological sequelae of meningitis.

Dr. J. S. Prichard is studying the value of strobscopic stimulation as an activator of seizure discharges in children. He is investigating also cases where seizures, though they at first appear to be due to focal organic disease, yet are of idiopathic origin. The control of convulsions by some of the newer drugs is being followed.

Dr. Ford Walker, in the Department of Genetics, has continued work on an objective diagnosis of mongolism based on an analysis of dermal configurations. Work on the genetical factors of galactosemia and nephrogenic diabetes insipidus has been initiated. In co-operation with Dr. H. M. Coleman of the Toronto East General Hospital, a study has been made of the genetical factors involved in a case of congenital bilateral absence of the femur.

Dr. Irene Uchida in co-operation with Dr. John Keith is continuing her study of genetical factors in rheumatic fever and in co-operation with Dr. W. L. Donohue has commenced a study of leukaemia.

Publications

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———"Eighteenth century cookery" (*Journal of the American Dietetic Association*, vol. 28, no. 5, May, 1952, pp. 422–4).

———"The Hospital for Sick Children, Toronto: Its medical future" (*Ontario Medical Review*, vol. 18, no. 8, Oct., 1951, pp. 29–32).

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———"Meals for nursing and expectant mothers" (*Canadian Hospital*, vol. 29, Feb., 1952, pp. 60–2, 102).

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Pathological Chemistry

Under the direction of Professor James A. Dauphinee

Teaching

No changes have been made this year in the senior teaching staff or in the courses of instruction given by this Department. For some time, however, it has been felt that the laboratory course in Pathological Chemistry, as now given to the medical undergraduates, has been too concentrated and that the students would get more benefit from the instruction if the same work was spread out over a longer period of

time. As a result the time-table has been revised so that, beginning with the next session, the laboratory course in this subject will be given during a full three-quarters of the third medical year instead of only during the first quarter as has been the case in the past. It has also been possible to rearrange the time-table so that the lectures of this course will be given to the students throughout the whole of their third medical year. It is hoped that these changes will be of benefit not only to the undergraduates but also to the teaching fellows and demonstrators who carry a large part of the teaching load in the laboratory classes. During the second half of the year a series of seminars on topics related to pathological chemistry and to the work of the various members of the Department have been held at weekly intervals.

Graduate students

Eleven graduate students, including 3 candidates for the Ph.D. and 2 for the M.A. degree, have been registered in the Department during the past year. Two of these hold graduate medical research fellowships from the National Research Council, one holds a fellowship from a grant-in-aid from the Canadian Arthritis and Rheumatism Society and one has come for his graduate training from the Department of Public Health Laboratories in Newfoundland. Three are medical graduates who have taken a year of work in this subject as a part of the training necessary for admission to the examinations for the Fellowship of the Royal College of Physicians and Surgeons of Canada. As a general rule these students have been able to remain in the Department for only the single year. It is felt that it would be much more satisfactory to them and to the Department if they could find it possible to carry on their investigations and work in this subject for at least a two-year period.

Research

Continued support from the National Research Council, the Ontario Cancer Treatment and Research Foundation, the Canadian Arthritis and Rheumatism Society, and from the Advisory Committee for Scientific Research of the University of Toronto has permitted the continuation of a number of research projects by various members of the Department. Much of the research which has been done has been concerned with the investigation of problems in the clinical field and has been carried out in close collaboration with the staff members of the Toronto General Hospital, the Toronto Psychiatric Hospital, and the Sunnybrook Hospital of the Department of Veterans Affairs. This has permitted the investigation of a number of very interesting clinical problems in a way which would otherwise have been completely impossible. The Head of this Department would like to take this opportunity of expressing his thanks and appreciation for the full co-operation which he and his staff have invariably received from all the members of the clinical departments.

Dr. J. C. Sinclair, of the Department of Medicine, and Dr. J. K. Wilson, Research Fellow, D.V.A., Sunnybrook, have carried out a very complete follow-up study on the clinical and laboratory findings in over 150 patients suffering from hepatic cirrhosis. Dr. Sinclair, with the help of Miss Peppiatt and Mr. C. E. Downs, has continued his studies on various liver function tests and particularly on the behaviour of free and esterified cholesterol in various forms of liver disease. The mineral metabolism, with special reference to the retention of salt and water and the treatment of ascites, has been followed by detailed balance studies in a limited number of cases of chronic hepatitis, and the effects of the administration of cortisone and ACTH to liver cases have also been studied in the metabolic wards of Sunnybrook and the Toronto General Hospital.

Miss Evel and Mrs. Grant have been studying the effect of various hormones including ACTH, cortisone, stilboestriol, and insulin on electrolyte balance in humans.

Dr. A. Rapoport has continued his studies of renal function in patients suffering

from renal conditions and has been awarded his M.A. degree after presentation of a thesis entitled "The Function of the Kidney in Cases of Liver Disease."

Mr. L. A. W. Feltham has investigated the determination of the total base in biological fluids by means of a titration procedure using tetrahydroxyquinone and by the use of synthetic ion exchange resins. He too was awarded his M.A. after presentation of a thesis entitled "The Determination of Total Base."

Mrs. Danoff, in collaboration with Dr. A. Rappaport of the Department of Medical Research, has been investigating the biochemical abnormalities which are associated with the development of hepatic coma.

Dr. Spence working with Dr. F. I. Lewis, of the Department of Surgery, has been attempting by a variety of procedures to produce ulcerative colitis experimentally in dogs; and working with Dr. Tovee, also of the Department of Surgery, he has been following the histological and chemical changes associated with experimentally produced subcapital fractures of the femoral neck in animals.

Dr. Lindsay has continued the work being carried out with Dr. I. B. Macdonald, of the Department of Surgery, in connection with his attempts to bring about successful homologous transplantations of organs from one animal to another.

Dr. W. Paul has been closely associated with the work of Dr. M. Johnston, Dr. R. Mustard, Dr. C. Ash, Dr. A. Scott, and others of the clinical departments in their studies on the use of radioactive iodine in the investigation and treatment of various diseases of the thyroid in humans. Miss Britton, also of the Radioactive Laboratory has been working with Dr. Wightman and Dr. Bardawill in their investigations of the metabolism of the white blood cells by the use of radioactive phosphorus.

Mr. C. E. Downs has collaborated with Drs. Greenwood and McKelvey, of the Department of Medicine, in their investigations into the use of ion exchange resins for controlling salt absorption and oedema in patients suffering from myocardial failure, and with Dr. W. T. W. Clarke, of the same Department, in his investigations into electrolyte disturbances in a variety of clinical conditions.

Dr. H. Kalant has developed a number of micro-analytical methods, based upon separation by paper chromatography and subsequent colorimetry, for the estimation of amino acids and various adrenocortical hormones. These will be used in his subsequent studies on the *in vivo* metabolism of these substances in animal tissues.

Under the direction of Professor T. F. Nicholson

Dr. A. Rapoport and Dr. Nicholson, in collaboration with members of the Banting and Best Department of Medical Research, have been investigating the nature of the stimulus to sodium excretion by the kidney, and the site of the mechanism which stimulates the formation of granules in the juxtaglomerular apparatus of the kidney.

Dr. Nicholson, with the technical assistance of Mr. C. H. Downs, has made further studies on the manner in which the kidney acidifies the urine. It has been shown definitely that the acid which is formed in the proximal tubules has a pH below 4.5 and therefore is probably one of the strong mineral acids.

Under the direction of Professor A. G. Gornall

In the Steroid Hormone Research Laboratory Dr. J. L. Harkins has been investigating the technique of paper chromatography as a means of defining more closely the relation of the adrenal cortex to normal pregnancy.

Mrs. M. P. Macdonald has continued to study the reaction between steroid hormones and 2:4-dinitrophenylhydrazone. It has been found that reaction for 5 minutes at 20°C. determines selectively the C-3 ketone and that 90 minutes' reaction at 59°C. determines in addition the C-20 ketone of adrenal cortical hormones. This new method has been applied to the analysis of urine, blood, and adrenal cortical extracts.

Miss M. W. Breau has obtained additional data on the hydrolysis of conjugated steroids in urine using β-glucuronidase from spleen and bacterial sources.

Mrs. K. M. Park has made further study of the techniques of a column chromatography of the steroids and Mrs. C. Gwilliam is now continuing this work.

Miss D. Strachan has determined the urinary 17-ketosteroids in all our clinical investigations and on a variety of other patients in hospital.

In collaboration with Dr. W. G. Bigelow, of the Department of Surgery, Mrs. M. Marten has studied the excretion of 17-ketosteroids and corticosteroids by groundhogs and attempts have been made to demonstrate an active principle in extracts of their hibernating glands.

In the Clinical Investigation Laboratory Mrs. C. E. Mullens, Miss V. Mednis, and Miss D. Liepins have determined the various nitrogenous components and corticosteroids excreted during metabolic studies of patients with various diseases.

The following problems have been studied in collaboration with the clinical departments: (1) metabolic and hormonal abnormalities in liver disease—with Drs. J. A. Dauphinee, J. C. Sinclair, and J. K. Wilson, Department of Medicine; (2) steroid excretion and nitrogen balance studies in rheumatoid arthritis, acromegaly, and diabetes—with Drs. A. A. Fletcher, M. A. Ogryzlo, and J. A. Little, Clinical Investigation Unit, Sunnybrook Hospital; (3) variation in the potency of ACTH—with Dr. M. A. Ogryzlo, Department of Medicine; (4) steroid excretion and nitrogen metabolism in periodic catatonia—with Drs. A. B. Stokes, J. G. Dewan, and A. Miller, Department of Psychiatry; (5) the effect of ACTH on Rh antibodies in late pregnancy—with Dr. D. E. Cannell, Department of Obstetrics and Gynaecology.

Publications

Bardawill, C. J. and Gornall, A. G. "The influence of dietary protein on liver injury due to carbon tetrachloride in dogs" (*Canadian Journal of Medical Sciences*, vol. 30, 1952, pp. 272–83).

Bigelow, W. G., Fleming, J. F. R., and Gornall, A. G. "The management of surgical shock in the poor risk patient" (*Canadian Medical Association Journal*, vol. 65, 1951, pp. 37–43).

Gornall, A. G. and Bardawill, C. J. "The study of liver function in dogs" (*Canadian Journal of Medical Sciences*, vol. 30, 1952, pp. 256–71).

Ogryzlo, M. A. and Gornall, A. G. "Observations on the oral administration of cortisone acetate" (*Canadian Medical Association Journal*, vol. 66, 1952, pp. 44–8).

Pathology

Under the direction of Professor John Hamilton

There have been few changes in the teaching programme during the past academic year. General Pathology was taught by Dr. Hamilton, and Special Pathology by several members of the Department, including Dr. H. J. Barrie, Dr. C. R. McLean, Dr. W. S. Hartroft, Dr. W. Anderson, and Dr. T. C. Brown. Neuropathology was given in the second year instead of in the third year, as previously. In place of the demonstration of fresh autopsy material by means of the epidiascope, weekly case conferences have been held. All the material from a current autopsy was used, and two or three students were asked to describe the lesions and arrive at a pathological diagnosis. When this had been done, the associated disturbances in function were discussed, and finally the clinical history.

The Department suffered a great loss this year in the death of Dr. William Magner. Since 1921 Dr. Magner had been on the staff, and during that time had contributed in no small measure to the successful teaching of Pathology to undergraduates. His dynamic personality, and enthusiasm for his subject, made him an outstanding lecturer and demonstrator. His contributions and criticisms at the staff meetings of the Department were both stimulating and sound. He will be greatly missed by his many friends and colleagues in Toronto and throughout Canada.

Dr. E. A. Linell has extended the scope of his visits to other hospitals by the establishment of periodic visits to the Ontario Hospital, Queen Street, where he demonstrates cases of interest which he has received from the Ontario mental hospitals. With the co-operation of Dr. Donohue he also attends regular neuropathological conferences at the Hospital for Sick Children.

Owing to the great increase in work undertaken by the Division of Neuropathology, it has become necessary to increase the number of the permanent staff. This required a remodelling and reallocation of room space, which have been satisfactorily completed.

Close co-operation continues with Dr. D. Wollin in the field of Neuro-Radiology. He attends our weekly conferences with the physicians, surgeons, and psychiatrists; Dr. Linell and members of his staff go to weekly neuro-radiological conferences at the Psychiatric Hospital. It is a great pleasure to be closely associated with this important development of Radiology.

The Department was fortunate in being visited by Dr. Harry Goldblatt of the Institute for Medical Research, Cedars of Lebanon Hospital, Los Angeles, who assisted at a pathological conference prior to addressing the Academy of Medicine. Dr. Jethro Gough, Welsh National School of Medicine, Cardiff, Wales, addressed a special meeting of the Department on anthracosis. Dr. V. C. Anguli of the Madras Medical College spent a week in the Department in preparation for the development of a Department of Neuropathology on her return to India.

Dr. Hamilton visited the medical schools in New York, Philadelphia, Baltimore, and Washington, to study the methods and development in cancer co-ordination.

The oral examinations for the Royal College of Physicians and Surgeons of Canada were held in the Department from the 5th to the 15th of February, which occasioned considerable interruption to the usual teaching activities.

In addition to the teaching fellows, the following have worked in the Department in a voluntary capacity: Dr. V. W. Pepper on the autopsy service for six months, Dr. M. W. M. Sloane (Mental Health grant Fellow in Neuropathology) for one year; and Dr. J. L. Blaisdell for three months.

Research

Members of the staff have undertaken the following research work.

Dr. Hamilton has continued investigations on the natural history of experimental glomerulonephritis in rabbits, and on factors influencing the development of atherosclerosis. Dr. Hamilton and Dr. H. J. Barrie have started to organize a museum of pathological material for teaching non-medical personnel at Camp Borden.

Dr. Barrie has been continuing his investigations into the early lesions in sarcoidosis, the anatomical basis of increased intrarenal pressure, and the anatomy and function of the smooth muscle of the kidney and pelvis.

Dr. J. L. Blaisdell, as a voluntary fellow, has been perfecting the technique of preparing large thin sections of organs mounted dry on paper. He now has a considerable collection of pathological material prepared in this way which is ideal for recording as well as for teaching.

Dr. G. A. Gow has made an analytical study of the factors responsible for so-called cardiac cirrhosis. Dr. I. Macnab has continued his investigations into the causes of low back pain. Dr. A. I. Macrae has made studies on non-colonizing tumour emboli in the renal glomeruli and on a case of disseminated torula infection. Dr. E. H. Simmons has made a study of idiopathic hypertrophy of the pylorus in adults.

Reported by Professor E. A. Linell

Dr. M. W. M. Sloane is utilizing the files of Neuropathology and the current autopsy material in collecting data for his research investigation into the pathology of the thalamus. This work is being undertaken in collaboration with Dr. A. B. Stokes.

Publications

Aszkanazy, C. L., Barrie, H. J. *et al.* "Systemic blastomycosis" (*Canadian Medical Association Journal*, vol. 65, July, 1951, pp. 55–6).

Barrie, H. J., Aszkanazy, C. L. *et al.* "More glomerular changes in diabetics" (*Canadian Medical Association Journal*, vol. 66, May, 1952, pp. 428–31).

Barrie, H. J., Cates, G. W., and McCulloch, E. A. "The response of the renal circulation of the rabbit to adrenaline" (*British Journal of Surgery*, vol. 39, March, 1952, pp. 465–9).

Blanchard, A. J. *et al.* "Malignant haemangioendothelioma of heart" (*Canadian Medical Association Journal*, vol. 66, Feb., 1952, pp. 147–50).

Blanchard, A. J. *et al.* "Rheumatoid nodules" (*Treatment Services Bulletin*, no. 7, Feb., 1952, pp. 71–82).

Brown, T. C. *et al.* "Medical identification in the 'Noronic' disaster" (*Journal of the American Medical Association*, vol. 148, Feb. 23, 1952, pp. 621–7).

Donohue, W. L. "Cancer in children" (*Health*, May-June, 1951).

Donohue, W. L. and Ritchie, R. C. "Studies on passive immunity in poliomyelitis: Histological observations" (*Canadian Journal of Medical Sciences*, vol. 30, Feb., 1952, pp. 54–67).

Donohue, W. L. *et al.* "ACTH and cortisone in the treatment of leukaemia in children" (*Canadian Medical Association Journal*, vol. 65, Dec., 1951, pp. 560–4).

Donohue, W. L. *et al.* "Folic acid antagonists in the treatment of leukaemia in children" (*Canadian Medical Association Journal*, vol. 65, Dec., 1951, pp. 556–60).

Donohue, W. L. *et al.* "Leukaemia in children" (*Canadian Medical Association Journal*, vol. 65, Dec., 1951, pp. 548–52).

Donohue, W. L. *et al.* "Management of erythroblastosis fetalis" (*Canadian Medical Association Journal*, vol. 66, April, 1952, pp. 356–9).

Donohue, W. L. *et al.* "Pituitary adrenocorticotropic hormone (ACTH) and 11-dehydro-17 hydroxy corticosterone (cortisone) therapy in the leukemias and lymphomas of children" (*Pediatrics*, vol. 8, July, 1951, pp. 22–33).

Donohue, W. L. *et al.* "Plasma in acute leukaemia" (*Canadian Medical Association Journal*, vol. 66, June, 1952, pp. 576–8).

Hartroft, W. S. "Experimental hypertension"; in *Cowdry's Problems of ageing*, ed. A. I. Lansing, pt. II, chap. 14. Baltimore: Williams & Wilkins Co. 1952.

———"Fluorochromy as an aid in the resolution of the specific granules of the islets of Langerhans" (*Nature*, vol. 168, Dec., 1951, p. 1000).

Hartroft, W. S. *et al.* "Pathogenesis of the cirrhosis produced by choline deficiency: Escape of lipid from fatty hepatic cysts into the biliary and vascular systems" (*American Journal of Pathology*, vol. 27, Nov.-Dec., 1951, pp. 951–89).

Hartroft, W. S. *et al.* "The protection of the liver by dietary factors" (*Gastroenterology*, vol. 20, March, 1952, pp. 375–84).

Peller, J. A. and Barrie, H. J. "Intrapleural thymic tumour in myasthenia gravis" (*Canadian Medical Association Journal*, vol. 66, March, 1952, pp. 273–4).

Peller, J. A. *et al.* "Death following injection of sodium morrhuate" (*Canadian Medical Association Journal*, vol. 65, Nov., 1951, pp. 473–5).

Ritchie, R. C., Donohue, W. L. *et al.* "Studies on poliomyelitis in Ontario" (*Canadian Medical Association Journal*, vol. 65, Dec., 1951, pp. 536–42).

Ritchie, R. C. *et al.* "Extractable insulin of pancreas" (*Diabetes*, vol. 1, March-April, 1952, pp. 87–107).

Ritchie, R. C. *et al.* "Insulin extractable from pancreas in non-diabetic and diabetic children" (*Pediatrics*, vol. 9, April, 1952, pp. 504–5).

Tonning, H. O., Barrie, H. J. *et al.* "Familial haemangiomata of the cerebellum. Report of three cases in a family of four" (*Journal of Neurosurgery*, vol. 9, March, 1952, pp. 124–32).

Wolman, L. "Role of the arachnoid granulation in the development of meningioma" (*Archives of Pathology*, vol. 53, Jan., 1952, pp. 70–7).

Pharmacology

Under the direction of Professor J. K. W. Ferguson

Two changes in the teaching programme of the Department occurred this year. Lectures in Pharmacology to the second medical year were started in the third quarter. The course will be completed in the first quarter of their third year. Next year the whole course will be given in the last three quarters of the second medical year. The transfer of Pharmacology from the third medical year to the second medical year brings us into conformity with practice in most other medical schools.

This year for the first time a full course of sixty lectures and fifteen laboratory periods was given to the fourth-year class in the Ontario College of Pharmacy. A short course on Bioassay was also given to the second year of the old two-year course of the Ontario College of Pharmacy. The course in Pharmacology to the second year in Dentistry was given as usual. Three shorter courses were also given to graduate students in Pharmacology, Dentistry, and Oto-Laryngology.

Research

Members of the staff have undertaken the following research work.

Professor Ferguson has continued his studies on the thyroid gland under three headings: (1) The measurement of the potency of various compounds related to thyroxine when given orally (with Mr. M. Warson). (2) The effect of sex hormones on resistance to thyroid hormone (with Dr. R. D. Prueter). (3) The development of a bioassay for thyrotropic hormone (with Dr. W. Paul).

Professor G. H. W. Lucas, with the assistance of Mr. J. R. MacDougal, has developed methods of estimating morphine and newer narcotic drugs in biological fluids. He has continued his studies on the assessment of alcohol as a factor in traffic accidents. This study was supported until March 31 by a Dominion-Provincial Public Health grant and after April 1 by a grant from the Attorney-General's Department of the Province of Ontario.

Professor W. Paul, with the assistance of Dr. Estey, has continued his studies on photoelectric estimation of oxygen saturation in human blood (ear oximetry).

Dr. W. Kalow has studied the effects of local anaesthetics on the cholinesterase of the blood. He has developed a method to study the excretion of curare after administration to human subjects.

Dr. E. J. Martin has continued his investigations of radon in the breath of human subjects who have absorbed radium as a result of exposure in industry.

Dr. J. M. Parker (Canadian Life Insurance Officers Association Medical Fellow) is studying the pharmacology of compounds related to theophylline.

Publications

Ferguson, J. K. W. "Control of sedatives" (*Canadian Pharmaceutical Journal*, Jan. 1, 1952).

———"Drug addiction" (*University of Toronto Medical Journal*, vol. 29, 1952, p. 191).

Ireland, P. E., Ferguson, J. K. W., and Stark, E. J. "The clinical and experimental comparison of cocaine and pontocaine as topical anesthetics in otolaryngological practice" (*Laryngoscope*, vol. 61, 1951, p. 767).

Kalow, W. "Hydrolysis of local anesthetics by human serum cholinesterase" (*Journal of Pharmacology and Experimental Therapeutics*, vol. 104, 1952, p. 122).

MacKay, R. A. and Ferguson, J. K. W. "Influence of certain anti-motion-sickness drugs on psychomotor and mental performance" (*Journal of Aviation Medicine*, vol. 22, 1951, p. 194).

Martin, E. J. and Ferguson, J. K. W. "Radon in normal breath" (*Canadian Journal of Medical Sciences*, vol. 30, 1952, p. 42).

Paul, W., Grapes, B. G., and Taplin, R. H. "Vascular patterns in ear as a source of error in oximetry" (*Federation Proceedings*, vol. 11, pt. 1, 1952, p. 119).

Smith, H. W. "The specificity of the desiccation method for determining alcohol in biological fluids" (*Journal of Laboratory and Clinical Medicine*, vol. 38, 1951, p. 762).

Smith, H. W. and Popham, R. E. "Blood alcohol levels in relation to driving" (*Canadian Medical Association Journal*, vol. 65, 1951, p. 325).

Physiology

Under the direction of Professor C. H. Best

The teaching courses have proceeded smoothly and the many graduate students available have given valuable service as demonstrators. New sections have been introduced into the advanced laboratory course and some of the older ones have been revised. The Physiological Society was fortunate in hearing four scientists from Great Britain, three from the United States, and one each from Argentina, Australia, Italy, South Africa, and Sweden. Three papers were presented by visiting scientists from other centres in Canada, namely, McGill University, the Ontario Veterinary College, and the Atomic Energy Project of the National Research Council. Members of the staff of the University of Toronto contributed thirteen papers, one each being received from the Department of Pharmacology and the Department of Applied Physics, four being received from the Banting and Best Department of Medical Research, and seven from the Department of Physiology. Professor James Campbell has carried the burden of the secretarial duties.

Research

Members of the staff have undertaken the following research work.

Investigations concerning the influence of various factors on growth of the islets of Langerhans have been continued by Dr. R. E. Haist and his colleagues. Miss E. H. Kerr found that the administration of large doses of stilboestrol to intact rats for six weeks caused a significant increase in the total islet weight, and in the islet weight/100 g. body weight. Mrs. I. MacDougall has found no significant change in islet weights in rats injected with stilbene or with trans-α-methyl stilbene for periods of six weeks. Previously it was shown that injections of saline extracts of anterior pituitary gland (APE) increased the islet weights. Mrs. MacDougall injected APE into hypophysectomized rats and found that the total islet weights were increased above the levels in uninjected hypophysectomized animals, but that the levels were similar to those of paired-fed intact controls. Mr. B. Kinash has found that adrenalectomy had little effect on islet weights, and this was also true of cortisone administration in a small series. The effect of growth hormone in glucose-injected rats and the effects of ACTH injection in hypophysectomized and intact rats are now under test. Dr. M. A. Ashworth has been extending his studies on the effect of diet on the islet volume. Additions of fat to a basal synthetic diet did not increase the total islet weights, but the addition of sugar or of casein did. The effects of various vitamin supplements to the basal diet did not support the idea that there is any very significant effect of vitamin additions on islet volume. However, there did appear to be a definite decrease in pancreas weight as the vitamin level increased.

Mr. J. B. Bassingthwaighte has been testing the effects of the administration of anterior pituitary extract covered by insulin in alloxan-diabetic rats in an attempt to stimulate new growth of islet tissue.

Continuing with the influence of the pituitary gland on pancreatic enzymes, Mrs. MacDougall has been studying pancreatic proteolytic activity and found that the total proteolytic activity of pancreas was reduced in hypophysectomized animals as compared to paired-fed controls. APE injection in hypophysectomized rats did not restore the protease levels.

Miss H. A. St. John has been comparing the efficacy of synthetic infusion media in rats shocked by a clamping procedure, and has tried also the influence of added therapeutic procedures. Mr. H. C. Brooks has found that pre-treatment with dibenamine greatly increases the incidence of survival in rats undergoing the clamping procedure, but that dibenamine administration did not promote survival when given after clamp release.

Mr. J. E. C. Dorchester has studied the effect of the pituitary gland on the secretin content of the rat intestine. He found that hypophysectomy reduces the secretin content of intestine and that this can be restored by the administration of anterior pituitary extract to the hypophysectomized animals. Administration of growth hormone preparations and of ACTH also restored the secretin levels in hypophysectomized animals. APE administration in intact rats elevated the secretin level above the normal values. These studies indicate that not all the gastro-intestinal endocrine structures are self-regulating entities and that at least one of them is influenced by the pituitary gland, and hence is related with other endocrine systems in the body through the pituitary.

Dr. E. A. Sellers and his associates have continued their studies on acclimatization and other changes in cold, on the effects of whole body irradiation, and on the production of tumours of the thyroid. Dr. Rosemary W. You and Mrs. O. J. Kalant have extended work previously reported from the laboratory on increased oxygen consumption and enzymatic activity of isolated tissues from acclimatized rats. In addition to the liver, the kidney and diaphragm preparation show evidence of increased metabolic activity. Mr. D. G. Baker has studied the effects of cold on carbohydrate metabolism, and has made a number of observations which will be followed further. Mr. N. W. Thomas and Dr. Sellers have studied the time-relations of acclimatization to cold under the experimental conditions used in the laboratory and have also undertaken measurements of lymph flow after cold injury. The increase in resistance to cold conferred by cortisone and thyroxine has been confirmed. A number of collaborative studies with Dr. J. Campbell, Dr. G. A. Wrenshall, and others have been carried out. In the section studying the effects of X- and gamma radiation, Mr. J. C. D. Barlow has shown that acclimatization to cold does not increase resistance after sublethal whole body irradiation if animals are paired on an age basis. Prior exposure to cold does not increase the mortality rate, but exposure to cold after whole body radiation does produce an increased mortality.

Experiments designed to test the effects of diet on resistance to radiation are in progress. Mr. L. A. Ferris has assisted in this work.

Dr. Jean M. Hill, with Mr. R. B. Lee, has continued the project on experimental tumours of the thyroid, and they have been successful in producing a number of metastasizing tumours. An interesting and puzzling observation has been made, that thyroid extract at the one particular dosage used caused an increment in the size of the very large thyroid glands produced by feeding propylthiouracil for prolonged periods. In this project radioiodine take-up, plasma protein-bound iodine, total iodine in the thyroid, radio-autographs, and histological examination have all been included. The co-operation of Dr. W. Paul and Mr. W. Wilson, of the Department of Pathological Chemistry and the Banting and Best Department of Medical Research respectively, has been much appreciated.

Dr. J. Campbell, Dr. H. R. Hausler, Mr. J. S. Munroe, and Mr. I. W. F. Davidson studied the effects of purified growth hormone in dogs. The results show that the purified material influences the plasma volume, the plasma proteins, the clotting system, the erythrocyte sedimentation rate, and the leucocytes, particularly the polymorphonuclear neutrophils. The effects of the purified growth hormone on depancreatized and metahypophyseal diabetic dogs have also been studied. A great intensification of the diabetes occurs on giving the purified material, while the fibrinogen content, erythrocyte sedimentation rate, and leucocyte count of the blood are increased. Dr. Hausler has found that the rat, in contrast to the dog, is resistant

to these changes in the blood picture as well as to the diabetogenic effects of the purified growth hormone. Dr. Campbell and Mr. Davidson continued their studies on the preparation and properties of the growth hormone. A highly purified product was obtained by a new method. In addition to high growth activity, this material has great diabetogenic activity. A method for the determination of thyroid-stimulating activity is being studied. Dr. Campbell has co-operated with Dr. H. D. Bett and Dr. G. A. McVicar in connection with the Connaught Laboratories' project for the production of growth hormone. Mr. Munroe has studied the responses of the adrenal gland to insulin, adrenocorticotrophic hormone, and stresses in intact, hypophysectomized, and alloxan-diabetic rats, and has made certain interesting observations. This group has co-operated with Dr. Sellers and his associates in studying the effects of purified growth hormone on the performance of rats exposed to cold.

The work on irradiated animals mentioned in last year's report has been extended by Dr. E. Fidlar and Mr. F. C. Monkhouse. By his direct method of estimation, Mr. Monkhouse showed that heparin could not be found in the blood of irradiated rats, guinea-pigs, rabbits, or dogs, although the method is capable of demonstrating added heparin in amounts as low as 0.01 mgm. per cent. This makes it very doubtful that the haemorrhagic condition of irradiation sickness is due to the presence of heparin as has been suggested by some workers on the basis of indirect methods such as protamine titration or the use of toluidine blue.

When sensitized animals were given an anaphylactic shock at varying periods after irradiation, there was evidence in rabbits and dogs that the heparin output which accompanied the shock was increased as a result of the irradiation. It could not be said, therefore, that the failure to find heparin in irradiated animals before shock was due to any deficiency in the source of heparin or defect in the method of its determination above a level of 0.01 mgm. per cent.

The smaller animals—rats, guinea-pigs, and rabbits—were subjected to the rapid method of irradiation of a single dose of X-rays, but dogs were given a slow method of irradiation in the form of daily exposure to the gamma radiation of a Co^{60} source. The blood cell counts in these animals have confirmed the findings of others that the haemorrhagic signs of irradiation sickness are accompanied by a low platelet count.

The work under Dr. D. W. Clarke has been on the problem of the assay of insulin in blood. Mr. J. M. Salter and Mr. E. E. Sotiroff have been working on the development of a suitable technique, using alloxan-diabetic, hypophysectomized rats as test animals, for the detection of the extremely small amounts of insulin which are in the blood. They have achieved a measure of success. Miss E. L. Wong has been investigating the effect of insulin upon an isolated rat diaphragm under some different experimental conditions. Dr. Clarke has been attempting to separate from plasma a fraction which contains the insulin, and to concentrate this fraction. The use of the principle of electrophoresis-convection has been giving quite promising results in this respect.

Dr. J. Markowitz and his group, comprising Drs. J. Archibald and H. G. Downie, of the Ontario Veterinary College, and Mr. C. W. Eze, are studying the factors responsible for second-stage hepatic insufficiency in the liverless dog.

Dr. J. W. Scott and Professor F. R. Miller have been studying the components and characteristics of strychnine spikes in the sensori-motor area of the cat's brain. Dr. Scott has recorded electroencephalograms from several of Dr. A. M. Rappaport's hepatic coma dogs. Under the direction of Dr. Scott, Mr. J. S. MacDougall is studying the sensory pathways of the mammalian spinal cord. Using electronic timers he has been able to determine accurately the time taken for impulses entering the dorsal root to traverse various portions of the sensory pathway. Dr. P. Hoeberechts (D.V.A. fellow) has been investigating autonomic reflexes produced in both normal and spinal animals.

Graduate students have completed the following theses.

For the M.A. degree:

BAKER, D. G. The distribution of carbohydrate in the albino rat following prolonged exposure to a low environmental temperature.

EZE, C. W. The cause of survival of dogs without an hepatic artery.

HAUSLER, H. R. Effect of pituitary factors on the cells of the blood and blood-forming tissues.

MACDOUGALL, Mrs. I. 1. A study of the relation of the pituitary to pancreatic protease. 2. An investigation of the effects of certain factors on the growth of the islets of Langerhans.

ORR, Miss J. L. Vascular lesions in alloxan-diabetic rats.

ROSENBERG, Miss E. E. The physiology of the skin as related to burns.

ST. JOHN, Miss H. A. A comparison of synthetic plasma extenders in experimental shock.

For the Ph.D. degree:

DORCHESTER, J. E. C. Factors influencing the secretin content of the rat intestine.

MONKHOUSE, F. C. Heparin in blood.

RAPPAPORT, A. M. Circulatory aspects of liver physiology.

PUBLICATIONS

BAKER, D. G. "Acclimatization and the reactions to low temperature" (*University of Toronto Medical Journal*, vol. 29, 1952, pp. 285–7).

CAMPBELL, J., LEI, H. P., and DAVIDSON, I. W. F. "Production of diabetes and increased erythrocyte sedimentation rate by purified growth hormone" (*Endocrinology*, vol. 49, 1951, pp. 635–40).

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Psychiatry

Under the direction of Professor Aldwyn Stokes

General considerations

The ferment of renewed thinking on the meaning of education has penetrated, particularly in the last year, to the Department of Psychiatry. Perhaps in no other university department are so many various disciplines of thought engaged in studying together the practical problems of human breakdown in living. In the corporative purpose not only has it been necessary to recapture the essential unity of knowledge, but also to summate the fractional technical contributions of each member discipline. Of necessity the basic philosophy of approach to mental disorder must have a general acceptance, roles must be more or less defined, and communication must be adequate. Always the focus of enthusiastic interest, critical appraisal, and competent ability must be the person who is ill, who is to be bettered. Confidence in what is proven and known must suffer the humbling restraints of the unknown.

Regularly, over the year, biochemists, physiologists, psychologists, social workers, sociologists have met with clinicians, nurses, occupational therapists to discuss these issues both for their own sake and for the sake of practical effects. Religious and legal principles have been evident in the matrix: where they have impinged on the individual problems of mental breakdown the strengths of the church and the law have been earnestly invoked.

Discussions do not bring accord except in simple, clear-cut problems and human disturbances are far from simple. However, clarification is possible by the interchange of ideas and the examination of what is known. To that extent the teaching staff has maintained the process of illuminating the way for those students who hold the future opportunities.

Of special importance to psychiatry are the bridges which must be built across the notions of genetics and physical organization, of physical function and psychological functioning, of psychology and social relations. The record of the Department shows the efforts put forth in these fundamental works.

Particular considerations

The Minister of Health of the Provincial Government has announced his support of the graduate training and research programmes in the Department of Psychiatry as an important part of a wider Mental Health programme for Ontario. Provision has been made for increased clinical facilities at the Toronto Psychiatric Hospital and already a modern Out-Patient Department has been organized under Dr. J. G. Dewan. In addition a new unit has been authorized at the Ontario Hospital, Queen Street, which will be accorded university status as a teaching mental hospital.

A renewed impetus has been given to an already extensive research programme by the appointment to the University staff of Dr. J. W. Lovett Doust. Dr. Doust is a distinguished worker in the area of Physiological Psychiatry; he has come as Associate to the University of Toronto from the Institute of Psychiatry, the University of London, England. Dr. H. Wasteneys (Associate in Biochemistry) and Dr. W. E. Blatz (Associate in Child Development) have also joined the staff and will provide invigorating influence on research.

An active group of teachers and investigators in Psychiatry will continue to attract good young graduates who are interested in the problems of nervous and mental illness. Some 25 doctors are enrolled for the coming session, an index both of opportunity and of responsibility. In addition 3 senior graduates are rounding off their clinical and theoretical experiences abroad. In the past year 7 obtained their certification as Psychiatric Specialists in the examinations of the Royal College of Physicians and Surgeons; 11 obtained the diploma of Psychiatry of the University of Toronto.

Undergraduate Training in Psychiatry continues to present the unsolved problems of large numbers of students, each with minimal clinical opportunity. A small

committee, with representation added from the Departments of Medicine, Paediatrics, Psychology, and the School of Hygiene, has been authorized to inquire into a vexing situation in an effort to achieve co-ordination and clinical strength.

The Academic Council has continued to exercise a wise influence on the developing clinical programme and on a full University-Government co-operation in the field of Mental Health. In its deliberations it has had perforce to consider the training programmes for nurses, both undergraduate and graduate, occupational therapists, clinical psychologists, psychiatric social workers, and other ancillary groups. Thinking on preventive aspects of mental health, with sociological implications, has been much to the fore.

Conclusion

In many ways the year has been memorable both on account of organizational difficulties and on account of the promise for the future. Always the staff has worked together in admirable colleagueship.

Research

Over the past year the biochemical researches into the metabolic problems of periodic catatonia have given promise of very important results. In conjunction with Dr. A. G. Gornall of the Department of Pathological Chemistry an insight into the individual variations of hormonal balance has been gained. Within the same syndrome of mental disorder one case shows a deficient excretion of ketosteroids with high corticoid values, another a high excretion of ketosteroids with low corticoid output. A meticulous methodology shows beyond doubt that at the level of physical organization achieved by endocrine control the problem of individuality becomes of paramount importance. Methods of approach which negate this principle offer conflicting evidence and obscure rational treatment. The effects of cortisone and androgens are being studied further by Dr. J. G. Dewan and his associates.

Neurophysiological studies continue under Dr. J. E. Goodwin and Dr. A. Bonkalo. The EEG record as a prognostic index for successful electroplexy has been extended to the prognostic problem of leucotomy operations. With Dr. Bonkalo, Dr. R. G. S. Arthurs is studying the effect of mysoline in cases of psychomotor epilepsy using the EEG record as a treatment pointer.

Psychometric researches into high-level neurological disturbances continue under Mr. Bruce Quarrington and Mr. Harley Wideman. With Mr. E. Douglass, Mr. Quarrington has isolated two sharply contrasting groups of stutterers with markedly different psycho-social developments. The clinical differentiation of the "interiorized stutterer" marks an important advance in the field of speech pathology. Mr. Douglass with Dr. D. Cappon and Dr. R. G. S. Arthurs is investigating the effect of Meduna's carbon dioxide therapy on neurotic illness.

The sociological research group enters its final year of a five-year research programme into the mental health aspects of a Toronto community. A considerable volume of data is under review by Mr. J. Seeley, Mr. A. R. Sim, and Mr. T. J. Mallinson for a final reporting. Mr. Farrell Toombs of the Institute of Business Administration in association with Mr. Peter Walmsley and Dr. A. Menzies is investigating the incidence and "causation within a group" of those psychiatric disabilities that arise in an industrial setting.

Apart from these physical, psychological, and social researches, clinical inquiries continue. Dr. J. G. Dewan has reported on mild depressive illnesses. Dr. M. V. Jackson has furthered her interest in clinical conditions associated with cerebral atrophy. Dr. A. Miller has completed an important four-year follow-up study of patients submitted to leucotomy. Dr. W. B. Spaulding with Dr. Dewan is completing a study of the physical factors bringing about acute confusional illnesses. Drs. E. J. Rosen, D. Cappon, and F. Davis continue to pursue their research in the field of psycho-dynamics. Mr. M. Teicher is reporting on mental disorder among the Eskimos following his experiences in Southampton Island.

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Radiology

Under the direction of Professor A. C. Singleton

The general work of the Department has been similar to that of recent years. The postgraduate teaching has been gradually improved by the lengthening of the diploma course to two years. No change has been made in the undergraduate teaching.

The museum facilities at Sunnybrook Hospital have been enlarged and improved and this museum is becoming of increasing value in postgraduate teaching.

Research

As in previous years research work in the Department has been carried on mostly on a joint basis with members of other departments of the Faculty. Dr. C. L. Ash, in conjunction with members of the Departments of Medicine and Surgery, has been investigating the value of a number of the newer chemotherapeutic compounds for the treatment of the lymphomas. Dr. L. R. Harnick has been conducting research on the results of Diodrast arthrography, with correlation of the clinical findings. In conjunction with the Medical staff at the Toronto Western Hospital, he has also been conducting research in congenital and acquired heart lesions. Dr. O. B. Millar, in conjunction with Dr. M. Shusterman, Department of Ophthalmology, has been conducting a study of the effects of radioactive strontium ($Sr.^{90}$) on diseases of the cornea. Dr. M. Vera Peters, in conjunction with Dr. N. Delarue, Department of Surgery, has carried out a detailed study of cancer of the breast. Dr. D. G. Wollin has been continuing his research on the subject of cerebral atrophy.

Publications

Wookey, H., Ash, C. L., Welsh, W. K., and Mustard, R. A. "The treatment of oral cancer by a combination of radiotherapy and surgery" (*Annals of Surgery*, vol. 134, 1951, p. 529).

Surgery

Under the direction of Professor R. M. Janes

The teaching programme for undergraduates was continued without further change. The great problem is to sort from the vast amount of material what may be regarded as fundamental knowledge. The undergraduate, looking over the field of surgery and its many specialties and thinking of what he might conceivably be expected to know, feels overwhelmed by the apparent hopelessness of his task. For that there seems no remedy unless it be assurance that the impossible is not expected. Because of the shift of emphasis from the teaching of technique to the teaching of the diagnosis of surgical conditions, the indications for surgical therapy, and the benefits that may be expected from surgery, the graduate of today possesses much more useful knowledge than graduates before him. Unfortunately, many probably feel that they have been taught little of what they regard as surgery.

The University scheme for the postgraduate training of surgeons through a system of planned residencies in the University hospitals and Sunnybrook Hospital continues to work well. It is pleasant to note that graduates of nearly every medical

school in Canada are receiving training with us. The following, most of whom have completed their training recently, obtained Fellowship in the Royal College of Surgeons of Canada by examination in 1951: in General Surgery, Drs. C. A. Stephens, J. B. Spence, D. C. Robertson, W. J. Orr, J. F. Murray, E. C. Grundy, O. V. Gray, H. S. Ford, G. F. Culnan, G. C. Caudwell, W. A. Brown, and C. B. Baker; in Surgery with emphasis on Neurosurgery, Dr. C. G. Drake; in Surgery with emphasis on Urology, Drs. G. D. Blue and L. H. Crimp; and in Surgery with emphasis on Orthopaedic Surgery, Dr. R. N. Lofthouse. Dr. R. F. Warren was granted his M.S.(Toronto). His thesis was on "Calcinosis of the Pancreas." Drs. Z. J. Borowy and F. G. Pearson were granted their B.Sc.(Med.) on the basis of work done in the Department of Physiology.

The advanced graduate course in Surgery given from September 4 to October 19, 1951, was fully attended. Members of the staff contributed to the annual graduate meeting sponsored by the Medical Alumni Association, October 25 and 26, 1951. The new scheme sponsored by the Kellogg Foundation has been endorsed enthusiastically by members of the Department. The Wisconsin Surgical Club visited Toronto on February 25, 1952. A programme was put on at the General Hospital in the morning and at the Hospital for Sick Children in the afternoon. The Central Surgical Association met in Toronto on March 6, 7, and 8, 1952. Under the chairmanship of Dr. J. R. F. Mills, a programme was arranged at the Toronto General Hospital on the morning of March 6, and a lecture room clinic at the Hospital for Sick Children in the afternoon was participated in by the members of staff of the various University hospitals. The American College of Surgeons held a sectional meeting in Toronto, May 15-17, 1952. Under the chairmanship of Dr. Stuart Gordon, operative clinics were arranged for the morning of May 15 and a symposium on fractures in the afternoon. Several members of the University staff participated in the programme on May 16 and 17.

Dr. K. G. McKenzie retires as Chief of the Division of Neurosurgery at the Toronto General Hospital on June 30. He has been appointed a Graduate Lecturer in Surgery and Consultant in Neurosurgery to the Hospital. Dr. McKenzie organized the Neurosurgical Service at the Toronto General Hospital in 1926, at that time the first neurosurgical unit in Canada. During the intervening years he has made great contributions to the University and the Hospital. On May 3 a party was organized in his honour by his former residents and he was presented with his portrait done by Frederick Varley. Dr. E. H. Botterell succeeds Dr. McKenzie as Associate Professor of Surgery in charge of the Division of Neurosurgery. Dr. C. R. B. Crompton of the Division of Urology at St. Michael's Hospital also retires on June 30, having reached the age of retirement. Due appreciation is expressed for his services to the University and St. Michael's Hospital. Dr. Ian Macnab, a graduate of Birmingham University, has joined the staff and has been appointed to the Division of Orthopaedic Surgery at the Toronto General Hospital. Dr. James A. Key has come to the Department from Durham University. Dr. Thomas Morley, a graduate of the University of Manchester, has joined the staff in the Division of Neurosurgery.

McLaughlin Foundation fellowships have been awarded to: Dr. W. A. Brown to study plastic surgery in England for one year, following which he will return to an appointment at the Western Hospital; Dr. W. R. Harris to continue his study of orthopaedic surgery in Britain and Scandinavia, following which he will return to the Division of Orthopaedic Surgery at the Toronto General Hospital; Dr. W. K. Lindsay to continue his study of plastic surgery at Baylor University, Dallas, Texas, following which he will return to the surgical staff of the Hospital for Sick Children; Dr. C. B. Baker to work with Dr. Alfred Blalock at Johns Hopkins, following which he will return to the surgical staff of St. Michael's Hospital; Dr. E. B. Hendrick to continue his study of neurosurgery at the Children's Hospital, Boston, following which he will return to a joint appointment at the Hospital for Sick Children and the Toronto Western Hospital. Grateful acknowledgment is made for the assistance that these young men are receiving in the completion of their training. Dr. H. R. Gallie is to

spend the next year in continued postgraduate training in Europe, following which he will return to a surgical appointment at the Toronto General Hospital.

During the year Dr. C. W. Taylor and Dr. D. L. MacIntosh received assistance from the John S. McEachern Memorial Fellowship Fund. Dr. Taylor studied the pathology of brain tumours under Dr. Cyril B. Courville, Los Angeles, California, and Dr. MacIntosh, malignant diseases of bones and joints at the Armed Forces Institute in Washington, D.C., and the Memorial Hospital, New York.

Dr. W. E. Gallie delivered the John Stewart Memorial Lecture on November 7, 1951, his subject being "Teaching and Research in Surgery," and was special guest lecturer at the annual refresher course of the Faculty of Medicine of Dalhousie University. Dr. R. I. Harris has been appointed a member of the Subcommittee on Orthopaedic Surgery, National Research Council, Washington, D.C., and Chairman of the Medical Advisory Committee of the Ontario Society for Crippled Children. Dr. D. W. G. Murray spent the summer in Australia and New Zealand lecturing and teaching. He was the first McIlraith Guest Professor of Surgery at the University of Sydney. Dr. Stuart Gordon has been elected President and Dr. C. W. Harris Vice-President of the Toronto Academy of Medicine. Dr. D. R. Mitchell is President-Elect of the North Eastern Section of the American Urological Association. Dr. E. H. Botterell has become a member of the Society of Neurological Surgeons, and Dr. Jessie Gray a Fellow of the American College of Surgeons. Dr. R. M. Janes is Vice-President (Surgery) of the Royal College of Physicians and Surgeons of Canada and President of the American Association for Thoracic Surgery. He delivered the Arthur Dean Bevan Lecture before the Chicago Surgical Society in October, his subject being "Surgery and Bronchiectasis." He was elected an Honorary Fellow of the Society. In addition to these activities, members of the surgical staff have participated in programmes of scientific meetings at widely scattered points in Canada and the United States, and Dr. W. G. Bigelow, by special invitation, took part in the discussions on hypothermia at the meeting of the International Society of Surgeons in Paris, France, in September, 1951.

During the year the Department has been glad to welcome many distinguished visitors, among whom was Sir Clement Price-Thomas.

Research

Members of the staff have undertaken the following research work.

Dr. W. G. Bigelow with the assistance of Dr. F. G. Pearson has continued research on cardiac problems. In co-operation with Mr. J. A. Hopps of the National Research Council further work has been carried out on the techniques of cardiac resuscitation. A closed chest method of defibrillating which combines a pacemaker and a defibrillator is being developed and one unit has already been made and used experimentally. In association with Dr. A. G. Gornall and Mrs. Magda Marten of the Department of Pathological Chemistry, studies on the hibernating ground-hog are continuing, particularly from the point of view of endocrine changes, and with special reference to the hibernating gland. Biochemical studies have been undertaken and experiments carried out to assess the limits of cold tolerance in animals. A study of diathermy for re-warming after frost-bite has been initiated and current techniques for re-vascularizing the heart are being studied.

Dr. E. H. Botterell in collaboration with Dr. John Scott is continuing a study of intra-arterial pressures in the carotid artery in cases of bleeding intracranial aneurysms as a guide to surgical therapy. A double-beam oscilloscope makes it possible to record simultaneously systemic and carotid artery pressures following occlusion of the carotid artery. Also in collaboration with Dr. Scott, studies of the operation of the brain by electrocortigrams have been undertaken and the surgical treatment of epilepsy has been commenced. At Sunnybrook Hospital, under the direction of Dr. Botterell, Dr. Gordon Robinson is conducting a follow-up study of 125 cases of tantalum cranioplasty.

Under the direction of Dr. R. I. Harris, Dr. Ian Macnab has continued the study of the pathological changes occurring in the spine in relation to the possible production of low back pain. An attempt is being made to correlate the pathological changes found in dissection, the X-ray changes, and the clinical picture of low back pain.

Dr. W. T. Mustard with the assistance of Dr. Anna Sirek and in collaboration with Dr. A. L. Chute has continued studies on experimental intracardiac surgery using extracorporeal circulation. Human application has been undertaken during the year.

Dr. G. H. C. Joynt has continued studies on the experimental production of bronchiectasis and cystic disease of the lungs.

Dr. Ian B. Macdonald with the assistance of Dr. W. R. N. Lindsay is continuing to investigate homotransplantation of organs.

Dr. A. W. Farmer in association with Professor Wilbur Franks and assisted by Dr. R. A. McComb has continued a research project on burns which has been in progress for several years.

Dr. F. I. Lewis in association with Dr. E. B. Tovee and with the assistance of Dr. W. J. E. Spence has continued experimental investigation of ulcerative colitis. Work previously carried out with fine abrasives and lysozyme has been repeated. Interest has been aroused by the fact that certain patients who have died following administration of antibiotics have had apparently typical ulcerative colitis.

Dr. E. B. Tovee has continued the experimental investigation of certain problems in connection with fracture of the neck of the femur. With the assistance of Dr. W. J. E. Spence and the co-operation of the Department of Pathological Chemistry a method for determining the calcium content of dead and living heads of femurs has been devised.

Dr. C. J. Robson has completed an investigation into the use of polyethylene tubing in reconstruction of ureters in dogs.

Dr. F. G. Kergin in collaboration with the Department of Pharmacology and with the assistance of Dr. H. W. Estey has conducted an investigation of the respiratory function of a number of patients who had extensive resections of pulmonary tissue some years ago. Studies on the oximeter have been continued. Dr. Kergin and Dr. R. A. Mustard have been investigating ways and means of reconstructing the oesophagus by new methods.

Dr. R. A. Mustard in association with Dr. M. W. Johnston of the Department of Medicine and with the assistance of Dr. Allene Scott has continued an investigation into the use of radioactive iodine in thyroid disease and a follow-up study of thyroid cancer.

Dr. N. W. Roome with the assistance of Dr. R. D. Jeffs has studied the serum potassium in patients with prostatic disease.

Publications

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———"What to know about carcinoma of the lung" (*Arizona Medicine*, vol. 8, no. 11, Nov., 1951, p. 36).
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MCKENZIE, K. G. and LAWSON, F. L. "The scalenus minimus muscle" (*Canadian Medical Association Journal*, vol. 65, 1951, pp. 358–61).
ROOME, N. W. "Instrument for endoscopic extraction of ureteral stones" (*Journal of Urology*, vol. 66, no. 4, Oct., 1951, 575–7).
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WOOKEY, H., ASH, C., WELSH, W. K., and MUSTARD, R. A. "The treatment of oral cancer by a combination of radiotherapy and surgery" (*Annals of Surgery*, vol. 134, Oct., 1951, p. 529).

Therapeutics

Under the direction of Professor K. J. R. Wightman

The teaching in fourth year has been ably carried out by Drs. C. Ezrin, R. Sheppard, and E. R. Yendt, the Assistants in Therapeutics this year. Demonstrations and discussions of the practical aspects of treatment have been given to a quarter of the class at a time, and the institution of a term examination may have had a salutary effect. In the third year a course of lectures is given, but the main interest centres on the weekly theatre clinics, in which a patient is presented for whom the students are asked to submit a plan of treatment. This year a mimeographed discussion of each patient was returned to the students, after their own essays had been read and analysed.

As usual, the teaching in Anaesthesia has been carried out by that staff under the direction of Dr. H. Shields. The aim is to instruct in the simpler types of anaesthetic, and one of the difficulties which presents itself is the fact that a great number of the anaesthetics given at the Hospital are of a specialized nature, not entirely suitable for the instruction of undergraduate students. In view of the extensive undergraduate and postgraduate teaching programme in Anaesthesia, and the anxiety of some of the members of the staff to carry out a greater amount of research work, discussions have been held throughout the year as to the advisability of establishing a separate department in anaesthesia as a means of facilitating and stimulating these activities. This change has now been authorized and the new department will begin to function on July 1, 1952.

Drs. Gardiner, Jousse, and Zinovieff have taken the full responsibility for instructing the students in the place and scope of physical medicine in the treatment of the patient, and particularly in his rehabilitation.

News of the retirement of Dr. C. G. Bryan, head of the staff in Anaesthesia at St. Michael's Hospital is received with regret. We express our gratitude to him for the services he has rendered to the Department.

RESEARCH

Members of the staff have undertaken the following research work:

Dr. J. M. Finlay has held the post of research fellow during the past year. He has been conducting a study of the effect of cortisone on various types of steatorrhoea, especially as it affects fat and carbohydrate absorption and the nitrogen bal-

ance. It is proposed that this study continue for another year since the results which have been obtained appear to have considerable significance.

Dr. C. J. Bardawill who holds a research fellowship from the National Cancer Institute of Canada, has continued his studies on leukaemia and lymphoma. An attempt is being made to discover what metabolic changes can be detected in the patient or in his leukocytes under the influence of various kinds of treatment. These include studies of nitrogen fractions in the urine, enzyme activity in the blood serum and leukocytes, and measurement of the specific activity of phosphorus in various fractions of the leukocytes as an index of the degree of metabolic activity in progress. Treatment with chemotherapeutic agents, ACTH, cortisone, and ionizing radiation is being studied.

Long-term studies on the maintenance therapy of pernicious anaemia are being continued.

Publications

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Division of Physical and Occupational Therapy

Under the direction of Dr. A. N. Zinovieff

Again a large number of students were enrolled in the first year, 107 being accepted in September. Of these, 3 dropped out during the course of the year for various personal reasons, and 104 sat their end-of-year examinations with the following results:

Passed with Honours	11
Passed	71
Conditioned	15
Failed	7
	104

In the second year 83 students were enrolled, and 80 sat for their end-of-year examinations, with the following results:

Passed with Honours	3
Passed	63
Conditioned	14
	80

In the third year of the old courses 62 students were enrolled, and all passed except 2, who were conditioned. The first postgraduate student to take the certificate of teacher of Occupational Therapy successfully completed her course also.

The use of the whole building at 6 Devonshire Place eased the difficulty of the teaching arrangements, but with the large numbers of students the teachers continued to be hard pressed. In the coming year an additional Occupational Therapy teacher is being allowed, and also one Physiotherapy teacher. Additional equipment for the teaching of electrotherapy and pottery is being obtained, so as to improve the teaching facilities.

Publications

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Banting and Best Department of Medical Research

Under the direction of Professor C. H. Best

Professor C. C. Lucas and Dr. Jessie H. Ridout, with the Director of the Department, have continued their studies of the nutritional defects of the so-called "mealie-meal" (ground white corn) consumed by many natives of South Africa as their staple article of diet. The high incidence of liver disease in these natives is believed to be related to some deficiency in this diet. After chemical analyses and feeding tests the sample of "mealie-meal" obtained from South Africa proved to be poor in minerals (calcium in particular being grossly deficient), low in protein (the most serious deficiencies involved the essential amino acids, tryptophane, lysine, methionine, phenylalanine, and threonine); and like all white corns, it was also grossly deficient in vitamins A and C and in some members of the B complex. The liver lesions can be attributed only in small part to choline deficiency; it is more probable that they result from imbalance in the essential amino acids, minerals, and B vitamins and the lack of vitamin A. Drs. Ridout and Lucas, in collaboration with Dr. Jean M. Patterson, have studied the effects of cholesterol, in several concentrations, upon liver lipids and serum cholesterol in rats consuming hypolipotropic diets and similar rations to which different amounts of choline chloride, of betaine, or of inositol had been added. The effect of vitamin B_{12} on the liver and kidney lesions observed in young and older rats consuming hypolipotropic diets has also been investigated.

Miss Jessie M. Lang has utilized microbiological assay procedures to determine the amino acid composition of "mealie-meal" obtained from South Africa; the choline and inositol contents were also estimated microbiologically. The choline content of some sea foods (oysters, shrimps, crabs, and lobsters) and of several plant products has been estimated similarly.

The following work has been carried out under the direction of Professor W. R. Franks. By giving thyroxine, a hormone necessary for normal body development (metamorphosis), Mr. R. Bather has found that the tumour-producing effect of the chemical 1, 2, 5, 6-dibenzanthracene can be markedly reduced. Conversely, depressing the thyroid, by feeding mice thiouracil, markedly increases cancer production from this chemical. Thyroxine had no significant effect on an established tumour.

Attempts to synthesize an antigen against cancer have been continued, using, in the present instance, various fractions of the cancer nucleoproteins which are related chemically to the known viruses and which in themselves are poor antigens. Attempts have been made, with Mr. A. Rodgman, to conjugate various nucleoprotein split products resulting from enzyme action with foreign protein to form active antigens specific against the nucleoprotein fraction so attached. With Rous sarcoma there has been some significant success in producing tumour resistance but quantitatively this indication still leaves much to be desired. Mice experiments have been uniformly negative.

The studies on the biological effect of irradiation have been continued with the co-operation of Mr. J. Skublics, Miss M. Shaw, and Miss A. McGregor. By reducing the dietary amount of magnesium, the coenzyme of the phosphorylating mechanism necessary for the formation of nucleoprotein etc., it has been found that growth, including tumour growth, is inhibited and that surprisingly the X-ray susceptibility is reduced. On restoring the magnesium to the diet, growth is accelerated and the tumour now indicates an increased susceptibility to X-ray. Feeding a diet low in copper reduces the amount of catalase, an enzyme which removes destructive peroxide formed by the radiation. When this removal is inhibited, the tumour shows an increased susceptibility to X-ray. These experiments with severely deficient diets serve to orientate further work directed toward clinical application.

Studies on the normal intracellular distribution of the coenzyme magnesium, by Mr. T. Shimizu, have shown that the magnesium concentration of the non-dividing

nucleus is only about 10 per cent of that of the cytoplasm, all of which can be leached by .002N citric acid.

The experiment designed to study the threshold of irradiation in relation to natural cancer production has been continued with Mr. G. A. Meek and with the co-operation of McIntyre-Porcupine Mines Limited, where an underground laboratory has been maintained. A relatively high ionizing radiation was obtained environmentally even half a mile underground and within these variations in the environment no change in spontaneous tumour incidence or the threshold of chemical carcinogenesis could be demonstrated.

Dr. Franks' group has also carried out tests with tars and fumes arising from electrodes used industrially in certain reducing processes. These tests have served to identify a tumour-producing hazard and to make possible steps to remove the hazard. These tumour studies have been made possible by grants-in-aid from the National Cancer Institute of Canada.

Dr. Franks and Mr. Meek, with the co-operation of Dr. C. R. McComb of the Hospital for Sick Children, have been investigating the possibility of developing a rapid quantitative method for determining chemically the level of adrenal cortical activity. Photometric skin tests designed to measure the antihyaluronidase activity which varies with corticoid level have been disappointing, but recently a method using X-ray with an opaque indicator has proven more successful. With Mr. Shimizu, Dr. Franks is carrying out experiments designed to enable a diagnosis to be made from post-mortem material as to whether or not ante-mortem anoxia played any role in the cause of accidental deaths. The latter two activities have been carried out with grants-in-aid from the Defence Research Board of Canada.

During the period covered by this report, Professor W. Stanley Hartroft attempted to obtain clearer visualization of the granules of the beta cells of the islets of Langerhans in men and in experimental animals. The previous application of phase microscopy for this purpose has been further developed by the use of the new type of variable contrast phase microscopy recently developed by the Leitz Optical Company. Mr. W. Wilson, senior technician, has developed a new stain for the granules of the beta cells. It greatly enhances the prominence imparted to beta granules by Gomori's aldehyde-fuchsin reagent, by the application of a counter-stain of light green and tartrazine. Nuclei are also stained by the latter dye.

In a study-leave period of five months during the summer and early fall of 1951 Dr. Hartroft explored some of the possibilities of the application of techniques of fluorochromy and microphotometry to visualization and measurement of granulation in beta cells. This work was carried out in the laboratories of Professor Le Gros Clark, head of the Department of Anatomy, Oxford University, under the immediate direction of Dr. Robert Barer, anatomist and optical physicist. Under the direction of Dr. Barer, Dr. Hartroft devised a method for measuring photometrically the amount of light absorbed by the granules in beta cells in micro-sections under standard conditions. It promises to provide a basis for the development of a quantitative method for assessing relatively small differences in the intensity of granulation in islet cells following application of suitable stimuli to experimental animals, such as dietary factors, hormonal influences, etc. Apparatus for these methods is now being assembled in Toronto and should soon be ready for use.

Mrs. Phyllis Merritt Hartroft has made excellent progress in her studies of the morphology and function of the juxtaglomerular cells. Professor L. B. Macpherson who is supported, as is Mrs. Hartroft, by the Nutrition Foundation, has begun a study in which labelled choline will be used to investigate the nature of lipotropic action. With Mr. C. S. Lennox he has investigated the form in which choline occurs in vegetable products.

Professor G. A. Wrenshall and his colleagues have continued their studies of the insulin content of pancreas. The paper describing the findings in 134 non-diabetic and 64 diabetic subjects has been published.

While working with our group Dr. C. J. Labuschagne, of the University of Cape Town, developed a method for subdividing the extractable insulin of pancreas into components which he described as "free" and "bound" insulin. The proportions of "free" and "bound" insulin of pancreas from maturity-onset diabetic and from non-diabetic adults are being measured in the hope that light may be thrown on the diabetes arising in mature subjects, i.e., to study the possibility of blockage of insulin release from the pancreas, or the presence of "bound" insulin in blood. No difference has been noted to date. The investigation is being expanded to include comparisons of insulin extractable by refrigerated physiological saline followed by further extractions of "free" and "bound" fractions, to check on the significance of Labuschagne's terms.

Two experiments have been performed in collaboration with Dr. E. Farber of Tulane University. Ethionine administration caused the extractable insulin of pancreas to fall below that of ethionine plus methionine controls and of water-injected controls. Experiments are continuing.

A study of acetone in diabetic and non-diabetic human breath has recently been published by Henderson, Karger and Wrenshall in the new journal *Diabetes*; Dr. Frank Allan (Toronto, 1922) is Editor, and the Director of the Department is Chairman of the Editorial Board.

The mass spectrometer has been adapted for detection of H^2 in deuterium-enriched water, and N^{15} in N^{15}-enriched nitrogen gas. The performance has been tested and found comparable with that claimed elsewhere for similar instruments. A pilot experiment on the turnover of liver choline nitrogen of rats is in progress (Macpherson, Henderson).

The large body of laboratory observations made in this Department on diabetic dogs during the past several years is now being prepared for publication.

Dr. W. J. Linghorne and Mr. D. C. O'Connell have continued their dental research. They have carried on an investigation of the reparative mechanisms involved in the replacement of lost supporting structures of the teeth. As loss of supporting structure through periodontal disease is the greatest cause of loss of teeth in adults, among civilized people, the need for further research is apparent.

Dr. W. G. B. Casselman extended his investigations of histochemical methods and their application to problems of normal and abnormal lipid metabolism, including the nature and pathogenesis of ceroid, the tissue-localization of phospholipids, and certain aspects of the fatty liver problem. Further studies were made of some interrelations between nutrition, kidney damage, and hypertension. These concerned antipressor substances of renal origin and the effects of various dietary modifications, namely, diets deficient in essential fatty acids, containing excess protein, or containing orally-active pressor drugs. Dr. H. M. Shanoff collaborated in some of the latter projects. Mrs. H. J. Hausler provided invaluable assistance throughout many of the above investigations and independently studied the effects of pancreatic-duct ligation in rats.

Dr. J. B. Firstbrook's studies of factors which influence plasma cholesterol concentration and the development of atherosclerosis in rabbits have been continued. It has been found that although the feeding of vegetable fat (which contains no cholesterol) does not produce hypercholesterolemia or atherosclerosis in rabbits, the feeding of vegetable fat with cholesterol produces a much more rapid development of severe atherosclerosis than does the feeding of cholesterol without fat. The plasma cholesterol concentration in rabbits fed cholesterol and fat for several weeks is on the average four to five times as high as in rabbits given cholesterol alone. A curious relationship between plasma cholesterol concentration and food restriction has been found. In rabbits fed cholesterol without fat, food restriction with consequent weight loss intensifies hypercholesterolemia. Animals fed fat with cholesterol do not exhibit this phenomenon.

Dr. Otakar Sirek developed his studies on the participation of insulin in the

anabolic action of other hormones. Studies on the relationship between insulin and testosterone, and with cortisone and different growth hormone preparations have been carried out.

Dr. G. R. Williams and Miss M. Nishikawara have been studying the effects of choline deficiency on various enzyme systems in rat liver. A study of changes in the distribution of nitrogen among the various cell fractions has been initiated. It is hoped that changes in nitrogen content will provide a basis for the interpretation of changes in enzyme activity. Preliminary results with both liver slices and mitochondria indicate that fatty acid oxidation (based on nitrogen content) is unimpaired in choline deficiency.

Dr. R. E. Semple has conducted investigations on the evaluation of both plasma volume expanders and Cowan's mechanical heart in the treatment of haemorrhagic shock. Work now under way concerns the chemistry and physiology of the polysaccharide, dextran. Mr. Campbell Cowan's mechanical heart is a particularly fine piece of engineering and construction and it has made possible the current studies of Drs. A. L. Chute and W. T. Mustard of the Sick Children's Hospital, on cardiac abnormalities in children.

After the report at the Tenth Macy Liver Injury Conference, on experimental hepatic ischemia and coma, made by Dr. A. M. Rappaport, he was asked to undertake a joint investigation of these problems with the Army Medical Center in Washington. He also continued with Dr. Z. J. Borowy to experiment on the production and relief of hepatic coma by surgical means. The biochemical changes were studied by Mrs. N. M. Danoff of the Department of Pathological Chemistry. Studies on liver structure were continued. The smallest liver unit (liver acinus) in which structure and function are well correlated was described, and its presence demonstrated in normal and pathological livers. This work was presented at the Eleventh Macy Liver Conference, May, 1952. A technique was devised for guided catheterization and radiography of the abdominal arteries and veins. Radiograms of these vessels were obtained, including the hepatic arteries and veins. With Dr. Casselman studies on hepatic blood flow were made using guided catheterization of the hepatic veins.

In the sub-department of Synthetic Chemistry, under the direction of Professor Erich Baer, the following studies have been carried out. Dr. D. Buchnea continued work begun by Dr. A. G. Newcombe on the synthesis of unsaturated α-lecithins and α-cephalins and has improved the initial steps in the procedure. Mr. H. C. Stancer has improved his method for the synthesis of L-α-glycerylphosphorylethanolamine and has investigated the acid and alkaline hydrolysis of this substance and of L-α-cephalin. A migration of the phosphorylethanolamine moiety was found in both instances. The mixture of α- and β-glycerophosphoric acid obtained resembled in composition those obtained from glycerylphosphorylcholine and lecithins. Mr. J. Maurukas has completed the development of a procedure permitting the synthesis of saturated phosphatidyl serines having predetermined configurations at the phosphatidyl and serine moieties and is now engaged in preparing a homologous series of L-α-phosphatidyl L-serines. He has obtained the L-α-distearoyl phosphatidyl L-serine which is expected to be identical with the reduction product of the phosphatidyl L-serine obtained from biological sources. Mr. F. Martin has been engaged in the preparation of materials for biological studies. The synthetic L-α-lecithins previously reported are obtained now in a distinctly crystalline state. Their analyses refute Grün's concept of the inner-salt structure of lecithins. The synthesis of hitherto unknown analogues of phospholipids containing glycol in place of glycerol is in progress. The first lecithin analogue, the stearoyl glycolecithin, was obtained and was found to possess haemolytic activity.

Graduate students have completed the following theses:

For the Ph.D. degree:

NISHIKAWARA, Miss MARGARET. Studies on cholinesterase with special reference to pseudo-cholinesterase.

Publications

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———"The escape of lipid from fatty cysts in experimental dietary cirrhosis"; in *Liver injury*, Transactions of the Ninth Conference of the Josiah Macy, Jr. Foundation, 1950, pp. 109–50. New York: The Foundation. 1951.

———"Experimental renal hypertension of dietary origin" (*Journal of Gerontology*, vol. 6, 1951, pp. 154–9).

———"Fatty cysts of liver. I. Discharge of intracystic lipid into bile canaliculi and sinusoids in choline-deficient rats: The etiological role of ruptured cysts in cirrhosis. II. Reabsorption of intracystic lipid in choline-deficient rats restored to normal diets" (*Federation Proceedings*, vol. 10, 1951, pp. 358, 370).

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